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By Arthur H. Burgess, M.Sc. Vict., F.R.C.S. Eng., F.A.C.S. (Hon.), LL.D.

HONORARY SURGEON TO THE MANCHESTER ROYAL INFIRMARY; PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF MANCHESTER

(*Concluded from p. 1359*)

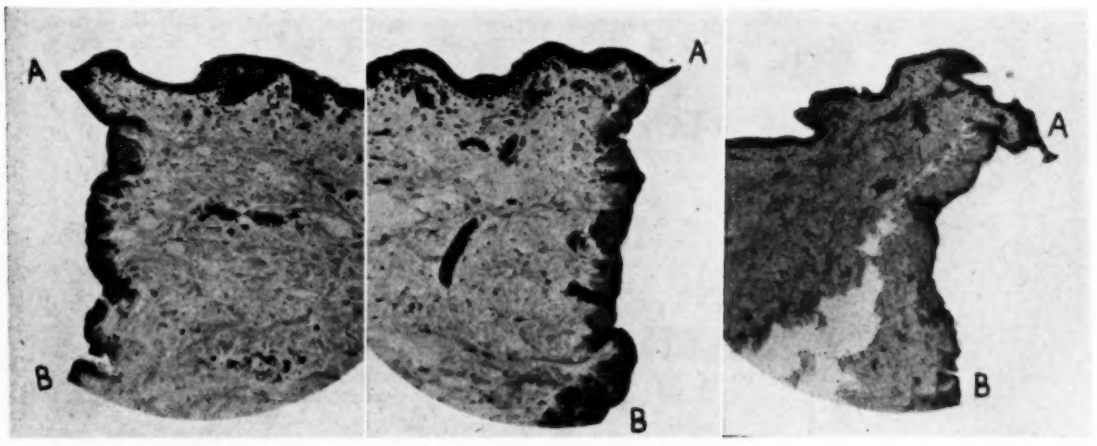
Rate of Healing

Provided that an equally rigid aseptic technique be adopted as is employed in scalpel surgery, my experience is that operations performed by electrosurgical methods—the cutting current for the incisional work and the coagulating current for all but the largest vessels, and using fine tungsten wire as the electrode—are attended by primary healing with a frequency at least equal to that of scalpel surgery. On theoretical grounds one would expect healing to be rather slower since, with the cutting current, there must necessarily be some slight necrosis of the wound surface, however microscopic, which will require to be dealt with by the phagocytes as a preliminary step towards healing. I, therefore, usually retain the skin sutures two or three days longer than when scalpel surgery has been used, though I am not convinced that this is essential. The ultimate scar can be just as inconspicuous, as supple and as strong as after the scalpel, and some of the scars upon the face and neck of female patients, of the inconspicuousness of which I, and they too, are most proud, have resulted solely from electro-section.

Experimental investigations upon animals have yielded rather inconstant results. Ellis [3] operating with the cutting current upon 120 dogs, under ether anæsthesia, with aseptic technique, and with scalpel incisions as control found that incisions in the muscles or in the muscular wall of the stomach healed just as readily and as strongly when made with the cutting current as with the scalpel. Of the skin incisions, however, only 60 per cent. of those electrically produced healed by primary union as against 97·5 per cent. in the control scalpel wounds, and even when primary union did occur the tensile strength of the former was rather less during the early period of healing, and did not equal that of the latter until the 24th day. He attributes this difference in healing between muscle and skin to the relatively high electrical resistance of the stratum corneum, to penetrate which needs such a density of current as necessarily to produce some coagulation of the lesser resistant layers of the skin, thus delaying the healing process. Pearse and Ward,[4] also experimenting with dogs under ether anæsthesia, and with strict surgical asepsis, found that electrosurgical incisions and partial excisions can be executed upon the liver and kidney with only slight primary hæmorrhage, without any secondary hæmorrhage in the absence of infection, and with uneventful healing, although the scarring was usually more extensive than after the scalpel. Beverley Chew Smith [5] in a series of animal experiments and clinical observations found that union in electrically made wounds is no less firm than in scalpel incisions, and Lilienthal [6] comes to a similar conclusion and considers that an electrically made wound is more likely to be aseptic than one made with the knife.

The mechanism of the cutting effect of the high-frequency current is not precisely known. Jellinek [7] considers that it is merely a thermal effect, the rapid conversion of the liquid contents of the cell into steam, with its consequent sudden expansion, actually bursting the cell, while Oudin [8] ascribes it to the assumption by the atoms of the tissues of a new rate of vibration, thus leading to their molecular destruction. When the active electrode approaches the skin very closely a minute spark, readily visible in the dark, passes between the point of the electrode and the skin; the electrode and the tissues act, in fact, as plates of a condenser and the intervening short air-space as the spark-gap.[9] This sparking occurs whether the electrode is fed with the cutting (undamped) or the coagulating (damped) current. In the former event, however, the spark, as seen in an instantaneous photograph, is a compact narrow pencil of flame whose action is strictly localised, whereas in the latter it is a broad spray irregularly distributed over a wide area of the tissues. This difference in the character of the spark is to be

Figs. 16 17 18



FIGS. 16–18.—Sections (× 35) showing effect of various incisions on skin and subcutaneous fat. The incised edge runs from A to B. Fig. 16, "cutting" current and 0·005 in. tungsten wire electrode. Fig. 17, "cutting" current and 0·008 tungsten wire electrode. Fig. 18, "coagulating" current and 0·005 tungsten wire electrode.

correlated with that between the uniformly sustained oscillatory potential of the undamped wave-train and the constantly varying potential of the damped variety, the current density of the former being considerably the greater and producing a persistent ionisation of the air-gap. Maclean insists strongly that "adequate current density is the sole general requirement for cutting by electricity"; it is easier technically to maintain this density with undamped than with damped wave-trains but "mysterious effects are resident in neither."

In spite of certain opinions to the contrary, no conclusive evidence has yet been adduced that the high-frequency current exerts any bactericidal action on the tissues other than that of the heat incited by their resistance to its passage, or that it possesses any selectively destructive action upon malignant cells; doubtless these are destructible at a temperature rather lower than that at which the cells of normal tissues are destroyed, but the difference is insufficient to be of any practical value.

My colleague, Dr. G. L. Loveday, the director of the clinical laboratory at the Manchester Royal Infirmary, has prepared for me many slides illustrating the microscopical appearances of most of the tissues of the body after section with the "cutting" current from a triode valve machine applied with the tungsten wire electrode (Figs. 16–23). The extent of coagulation necrosis is astonishingly small, and in many sections Dr. Loveday reports "practically no necrosis." It requires the section to be cut fairly thick and to be stained deeply before necrosis can be demonstrated to an extent sufficient to show upon a lantern slide.

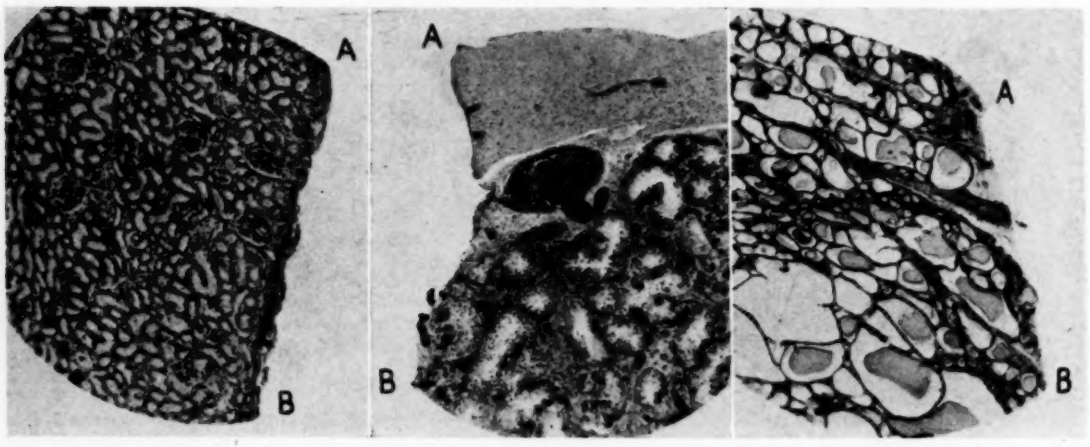
Advantages and Disadvantages of Electrosurgery

In the surgery of malignant disease it is generally accepted that malignant cells can be transplanted during the course of a surgical operation if cancerous tissue—either the primary growth, the secondary glands, or the numerous "permeated" lymphatic channels between these—be traversed by a scalpel which passes thence into healthy tissues; many local recurrences are thus explicable. If, however, the scalpel be replaced by the fine high-frequency electrode the intense heat generated at its point of contact with the tissues will suffice to destroy instantaneously any such liberated cells and so prevent their local transplantation, while the divided lymph and blood capillaries are immediately sealed and these further avenues of dissemination effectively closed. So obvious is the superiority of the high-frequency electrode over the scalpel in this respect that it is now generally recognised as the safer instrument in the surgery of all malignant disease. The same may be said of its employment during "biopsy" upon any tumour suspected of malignancy, or where incisions have to be made into, or in the close proximity of tissues already the seat of bacterial infection—such as carbuncle, cellulitis, &c.

In the surgery of *non-malignant* and *non-infected* conditions, however, we are upon more debatable ground, and it has been in an attempt to ascertain for myself the possibilities of electrosection in general surgery that I have used it so largely and in such a variety of operations during the past six years. In comparison with scalpel surgery electrosection has, I am convinced, certain definite advantages, and foremost among these I would place the *lesser amount of after-pain* not only in the immediate post-operative period, but throughout the whole course of wound healing. In dividing nerve-fibres the high-frequency current seals over their ends in such a way as to render them much less sensitive than after division with the knife, and in extensive operation wounds, such as those of large amputations of limbs or of "radical breast" operations, this difference is strikingly manifest. On three occasions I have performed, with electrosection, the radical breast operation where I had previously removed the other breast with the scalpel, and in each instance the unsolicited testimony of the patient was overwhelmingly in favour of electrosection. The same contrast is well shown in operations upon specially sensitive regions such as the anal canal, and the pain following operations for hæmorrhoids, particularly that associated with the first action of the bowels, is markedly alleviated.

It is usually stated that *hæmorrhage* is lessened, but I am not convinced that this is so to any great extent if the purely cutting current only is used. With this, oozing from capillaries is slightly less and is earlier spontaneously arrested, but vessels of any size require to be picked up with forceps much as in scalpel surgery, and either ligatured in the usual way or sealed with the coagulating current.

FIGS. 21 22 23

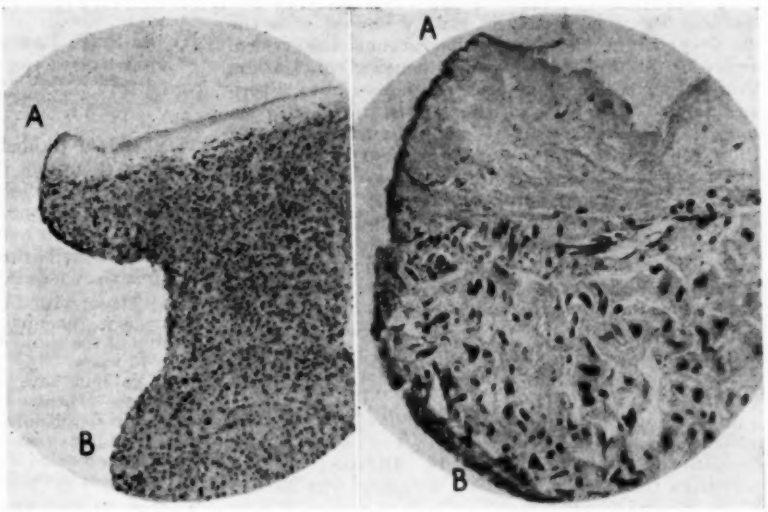


FIGS. 21–23.—Sections (× 35) showing effect of incision with "cutting" current and 0·005 tungsten wire electrode. Fig. 21, kidney. Fig. 22, testis. Fig. 23, thyroid.

Some high-frequency machines deliver a current which is a compromise between the purely cutting and coagulating currents, and with these hæmorrhage is undoubtedly less, but only because of the greater degree of coagulation produced over the entire wound surface, with its consequent lesser probability of perfect primary union.

There is no doubt that *shock* is definitely less with electrosection, partly from the diminished afferent impulses due to the sealing up of divided nerve-fibres, partly from the slight diminution in hæmorrhage, and partly from the increased temperature of the severed tissues—an effect readily appreciated in the radical breast operation, where the pectoral muscles feel quite hot even to the rubber-gloved hand. The sealing of blood-vessels by running the current along an artery-forceps temporarily applied thereto, in place of using ligatures, may lead in a large wound to a considerable saving not only in time but also in expense, particularly if the surgeon be one who uses catgut alone for ligature material; moreover, the lesser amount of foreign body thus left behind is conducive to better wound healing. Owing to the intense heat developed at the point of the electrode a wound made by electrosection is more likely to be aseptic than if made with a scalpel, and Howard Kelly [10] considers that in wound left unsutured healing is more rapid than in the average surgical case; less scar tissue is formed and the resultant scar is softer and more pliable and has less tendency to contract. Anderson [11] whose brilliant pioneer work in the electrosurgery of the breast is well known, is assured by his anæsthetist that a very much lighter anæsthesia suffices than for the scalpel operation, and my anæsthetist confirms this.

FIGS. 19 20



FIGS. 19 and 20.—Liver incised with "cutting" current and 0·005 tungsten wire electrode. Fig. 19 (× 50). Fig. 20 (× 250).

The *disadvantages* of electrosurgery are that high-frequency machines of sufficient power to prove effective in all branches of surgical work are cumbersome and difficult of transport, and at present are undoubtedly expensive initially, though not in their running costs. Some considerable period of training is required for their effective use since a very different touch is needed than for scalpel surgery. Also, ether, acetylene, or other similar explosive anæsthetic cannot be employed in operations upon the head or neck.

Indications

Undoubtedly the most important indication for electrosurgery is to replace the scalpel in operations for the removal of malignant growths, whether of the skin or of the deeper tissues or organs: here, by sealing off divided lymphatic vessels and destroying exposed cancer cells, it minimises the chances of local recurrence. The radical removal of breast carcinoma by electrosurgical methods has been well described by Anderson [11] and by Lowry,[12] and may be taken as a type for similar operations elsewhere in malignant disease.

On the introduction of Harvey Cushing, electrosurgical methods have now been adopted in all neurosurgical clinics. My colleague, Geoffrey Jefferson, finds the tungsten wire loop electrode invaluable in looping out the central portions of brain tumours with the cutting current and so permitting the ready withdrawal of their periphery: the application of the bipolar electrodes to vascular tumours immediately prior to their removal minimises hæmorrhage. Superficial vessels can be obliterated by stroking with a weak coagulating current, and the use of silver clips largely obviated. In cerebellar operations and in laminectomy the separation of the muscles from bone is more easily performed with the cutting electrode than with the knife.

The surgery of non-malignant conditions opens up a wide field for electrosurgery, and I have employed electrosection in most of the operations that fall to the lot of a surgeon to a large general hospital. The time at my disposal does not permit reference to more than a few examples. All operations in which incisions have to be made into tissues already infected are more safely undertaken with electrosection than with the scalpel. With the exception of the division of the bone every step of an amputation can be performed with electrosection, the main vessels alone requiring ligature; perfect primary union can result with much less tendency to a painful stump. In dividing the abdominal wall during paramedian laparotomy, after division of the skin the current requires to be increased considerably for the severance of the subcutaneous fat, and afterwards reduced for that of the anterior sheath of the rectus so as to avoid inconvenient contractions of the underlying muscle; the inner edge of the rectus is then retracted outwards and the peritoneum, picked up with two Spencer-Wells forceps applied transversely, is divided between them in a vertical direction sufficiently to admit two fingers of the left hand; these raise the peritoneum away from the viscera and permit of its safe and rapid electrosection for the full extent of the wound. All incisions of the hollow viscera—in resections, anastomoses, "-ostomies," and local excisions of ulcers or growths—are made with the electrosector, as are partial excisions of the solid viscera—liver, spleen, pancreas, kidney—while with

it adhesions in situations difficult of access can be dealt with more readily than with knife or scissors.

In suprapubic prostatectomy by the "open" method the mucosa can be readily incised with the electrosector in circular fashion around the vesical orifice of the urethra before commencing enucleation, thus leaving a smooth mucosal edge instead of a torn and ragged one; with it the "prostatic shelf" can be divided or, better still, a V-shaped portion removed therefrom, while the coagulating current can be easily applied to any bleeding point in the prostatic bed. In the per-urethral resection of the prostate with the McCarthy prostatic electrotome or one of its modifications, if the cutting current from a triode valve apparatus be employed the loop must be drawn through the projecting prostatic tissue more slowly than when incising skin owing to the comparatively slight coagulating action of the undamped wave current; otherwise the oozing of blood from the raw prostatic surface exposed may prove rather troublesome.

In thyroid gland surgery, particularly in the presence of hyperthyroidism, the electrosector can replace the scalpel throughout. Division of the skin with the very fine (0·005) tungsten wire as the active electrode can, I am convinced, leave a scar at least as inconspicuous as that after scalpel incision. The gland tissue can be readily severed and any spurting vessels coagulated, while it is sometimes preferable to scoop out with the tungsten wire loop as the active electrode the main mass of each lateral lobe, carefully avoiding the vicinity of the recurrent laryngeal nerves; this leaves a mere shell of thyroid tissue, and the cavity thus remaining can be obliterated by catgut suture.

It is in the electrosurgical treatment of such minor affections of the anal canal as polypi, fissures, fistulæ, and hæmorrhoids that is noticeable more markedly, perhaps, than elsewhere the remarkable diminution in post-operative pain as compared with that after the more usual surgical procedures; its application is here invaluable.

Finally, from the point of view of the surgeon himself, electrosection will revive his interest in surgical procedures which, owing to the systematisation and standardisation of their technique, have become almost monotonous in their performance: even such simple operations as the excision of a sebaceous cyst or of a chronically inflamed bursa acquire, with electrosurgery, a fascination of their own. Moreover, electrosurgery is but in its infancy, and there is every reason to hope that considerable advances will be forthcoming in the near future—possibly even the replacement of suture of the tissues in some cases by a process of electric welding analogous to that now utilised in connexion with metals. Be that as it may, the more I see of electrosurgery the less inclined I am to concur in that dictum of the most famous of living British surgeons that "the craft of surgery has almost reached its limitations." *

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* At the end of the Bradshaw lecture Prof. Burgess showed a short film illustrating the electrosurgical removal of a lipoma from the abdominal wall.

LATE RESULTS OF TREATMENT BY ARTIFICIAL PNEUMOTHORAX

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In 1924 I published in The Lancet [1] an account of 250 patients on whom I had induced or attempted to induce artificial pneumothorax. In the last of these cases the pneumothorax was induced in March, 1923, so that in every case it is over ten years since the treatment began.

I put the cases into the following groups:—

(A) Those with little or no resistance and an acute pulmonary tuberculosis. This group consisted almost entirely of the acute disease found in young girls of about 16 or 17 years.

(C) Patients with medium resistance, and I subdivided them into—(1) cases with only one lung involved; (2) cases with some involvement of the better lung but less than a third; and (3) cases in which more than a third of the better lung was involved.

(D) Non-tuberculous cases.

In every case except in group (D) tubercle bacilli were present in the sputum. To-day artificial pneumothorax is induced far more readily than it was ten or fifteen years ago, and it is now quite common to find a case with very few symptoms and no signs except on X ray examination being treated by pneumothorax. I agree with the modern tendency to induce an artificial pneumothorax early and think it is still done more often too late than too early, but one must admit that many patients made an excellent recovery with simple sanatorium treatment, so that a number now treated by pneumothorax would have become well without it.

In the present series the treatment was never started unless the patient showed no sign of improvement after some six months' simple medical treatment. Even if crepitations were heard over the upper part of one lung and tubercle bacilli were present in the sputum the patient was given a trial of sanatorium treatment, and as this leads to a temporary improvement in most cases, pneumothorax was usually deferred until some subsequent relapse by which time the disease was advanced.

In 1922 [2] I protested against waiting more than six months before inducing a pneumothorax if tubercle bacilli persisted in the sputum, and advocated starting the collapse earlier, but it may be taken that in every case in the present series a trial of simple medical treatment had been made and that in the great majority the patient was getting worse. Not one was what now would be called in the early stage.

TABLE I.—*Cases in which an Efficient Pneumothorax was Produced (1924)*

—	S.P.	A.	C.1.	C.2.	C.3.	D.	Total.
Arrested ..	2	—	50	17	—	13	82
Better ..	—	1	8	13	1	2	25
No change ..	1	—	3	6	—	4	14
Worse ..	2	—	6	7	1	—	16
Dead ..	3	3	4	18	19	6	53
Total ..	8	4	71	61	21	25	190

S.P. = Spontaneous pneumothorax.

These facts should be borne in mind when comparing this series with others. Table I. shows the condition in 1924 of patients treated by an efficient artificial pneumothorax, and Table II. the present

condition of the same patients except for five who cannot be traced. In eight cases the collapse started as a spontaneous pneumothorax but was subsequently controlled artificially.

TABLE II.—*The same cases in 1933*

—	S.P.	A.	C.1.	C.2.	C.3.	D.	Total.
Arrested ..	1	—	36	7	—	12	56
Alive but not arrested ..	—	—	3	4	—	1	8
Dead ..	7	4	32	46	21	11	121
Total ..	8	4	71	57	21	24	185

Table III. shows the results in cases where the pneumothorax was only partial and maintained for less than three months.

TABLE III.—*Cases in which only a Partial and Incomplete Collapse was Produced (1924)*

—	A.	C.1.	C.2.	C.3.	D.	Total.
Arrested	—	2	—	—	1	3
Better	—	1	2	—	—	3
No change ..	—	—	1	—	—	1
Worse	—	2	1	—	—	3
Dead	3	1	5	11	1	21
Total ..	3	6	9	11	2	31

TABLE IV.—*The same cases in 1933*

—	A.	C.1.	C.2.	C.3.	D.	Total.
Arrested	—	1	2	—	1	4
Alive but not arrested ..	—	1	—	—	—	1
Dead	3	4	7	11	1	26
Total ..	3	6	9	11	2	31

Table V. gives the results in cases where an attempt was made but no collapse was obtained.

TABLE V.—(*1924*)

—	A.	C.1.	C.2.	C.3.	D.	Total.
Arrested	—	—	—	—	—	0
Better	—	2	—	—	—	2
No change ..	—	3	2	—	—	5
Worse	—	1	2	—	—	3
Dead	2	5	6	4	2	19
Total ..	2	11	10	4	2	29

TABLE VI.—*The same cases in 1933*

—	A.	C.1.	C.2.	C.3.	D.	Total.
Arrested	—	3	1	—	—	4
Alive but not arrested.. ..	—	—	—	—	—	0
Dead	2	7	9	4	2	24
Total ..	2	10	10	4	2	28

One could not be traced.

In fatal cases where an efficient pneumothorax was obtained, the interval of time between the induction of pneumothorax and death of the patient was as given in Table VII.

These deaths were not all due to tuberculosis, two were suicides, three were from pneumonia, and one followed a motor accident, and no doubt others resulted from some non-tuberculous cause. I decided to record them simply as deaths in order to avoid the obvious criticism that death was probably hastened by tuberculosis even if not actually caused by it.

The fact I would emphasise is that of 71 unilateral cases who failed to improve after at least six months' simple treatment and for whom the prognosis was considered bad, and all of whom had tubercle bacilli persisting in the sputum, over half are alive and free

TABLE VII

—	C.1.	C.2.	C.3.	—	C.1.	C.2.	C.3.
1– 6 months..	—	1	4	7– 8 years ..	2	2	1
6–12 ,, ..	—	—	9	8– 9 ,, ..	1	2	—
1– 2 years ..	2	12	6	9–10 ,, ..	1	1	—
2– 3 ,, ..	6	10	1	10–11 ,, ..	2	1	—
3– 4 ,, ..	6	11	—	11–12 ,, ..	—	1	—
4– 5 ,, ..	8	1	—	12–13 ,, ..	—	1	—
5– 6 ,, ..	4	1	—				
6– 7 ,, ..	—	2	—	Total ..	32	46	21

from symptoms of tuberculosis after a period of more than ten years.

Out of 57 cases with active disease in the better lung 46 are dead. All the cases with over a third of the better lung affected died within two years, except one who lived for two and a half and another for seven years.

These figures support the modern view that artificial pneumothorax should be done early and especially before there is involvement of the better lung. If the disease remains unilateral artificial pneumothorax offers over a 50 per cent. chance of recovery even if there has been considerable spread of disease in the affected lung and the outlook is considered bad. In definite unilateral cases a higher percentage of recoveries would be obtained if the lung were collapsed at once instead of waiting for a preliminary six months' trial of simple treatment or for a subsequent relapse.

Another reason for collapsing the lung early is to prevent the formation of adherent pleura or adhesions. Although under modern methods thoracoplasty or cauterisation of adhesions may yet lead to a successful issue, the patient's chances of recovery are much greater when a collapse is obtained by artificial pneumothorax without having to resort to such surgical procedures.

Of the 24 non-tuberculous cases in which a successful pneumothorax was induced, 8 were cases of lung abscess, 8 of bronchiectasis, 3 of recurrent hæmoptysis, 2 of chronic pleural effusion, and 3 of carcinoma. Of these the following 21 were recorded in 1923 in THE LANCET.[3]

ABSCESS OF LUNG

1. Abscess in the left lung after confinement in a woman of 34. Pneumothorax maintained for 13 months. She is now fit and has had no return of the symptoms.

2. Abscess in the right lung after confinement in a woman of 26. Pneumothorax maintained for 14 months. She has kept well and free from symptoms.

3. Abscess in the right lung following broncho-pneumonia in a man of 30. Pneumothorax maintained for 11 months. He is still well and has no symptoms.

4. Abscess of the right lung following operation for nasal polypi. Four days after the pneumothorax was induced the lung ruptured and a pyopneumothorax developed. This was drained. He has made a good recovery and has since kept well.

5. Abscess of left lung in a man of 50. Three months after pneumothorax was induced the abscess ruptured whilst he was running. Pus was aspirated and the pleural cavity washed out on several occasions. He recovered and is now well except for dyspnœa on exertion.

6. Abscess in the right lung after appendicectomy in a man of 42. Pneumothorax was maintained for four months but the abscess was not collapsed owing to adherent pleura. The lung was allowed to re-expand and a partial thoracoplasty was done. He is now free from symptoms.

7. Pneumothorax induced for an abscess of the right lung in a man of 36. A large adhesion prevented the collapse of the lung so thoracotomy was performed and the adhesion divided, but the patient died the next day.

BRONCHIECTASIS

8. Right-sided bronchiectasis in a woman of 23. Still fit and free from symptoms.

9. Bilateral pneumothorax for bronchiectasis of both bases in a woman of 22. This patient is well and at work.

10. Right bronchiectasis in a boy of 15. Died from cerebral abscess in 1926.

11. Left bronchiectasis in a man of 36. Died December, 1927.

12. Left bronchiectasis in a man of 41. Immediate improvement after pneumothorax, but the lung became drawn out by the contraction of adhesions so thoracoplasty was performed and he died shortly afterwards from pneumonia.

13. Right bronchiectasis in a woman of 33. Pneumothorax treatment only partially successful so thoracoplasty was performed but she died a few weeks later.

HÆMOPTYSIS OF UNKNOWN ORIGIN

14. Recurrent hæmoptysis for 14 years in a man of 28. No return of hæmoptysis since collapse of the lung and he is still fit and at work, but his son has recently developed pulmonary tuberculosis.

15. Recurrent attacks of hæmoptysis in a woman of 27. These were stopped by pneumothorax but she died in 1925 from tuberculosis.

16. Recurrent hæmoptysis in a woman of 32 with signs at the base of the right lung. The pneumothorax did not control the hæmoptysis. She died from influenza in 1927.

CHRONIC PLEURAL EFFUSION

17. Man of 44. Still keeping fit.

18. Woman of 30 who is still fit and free from symptoms.

The other three cases recorded in 1923 were of carcinoma, and all died.

The last three cases which have not been recorded are :—

1. Abscess of lung following tonsillectomy in a woman of 24. The pneumothorax was maintained for seven months. She lost her symptoms and remains well.

2. Bronchiectasis in a woman of 28 who was improved, but still had sputum and died of pneumonia nine years after the pneumothorax had been induced.

3. Bronchiectasis in a boy of 18. This was only partially successful and was followed by thoracoplasty. He is still alive and able to help with a little housework, but has copious and occasionally offensive sputum.

It is more usual at present to treat bronchiectasis and abscess of the lung by surgical means rather than by artificial pneumothorax, and it is only on rare occasions that I now advocate pneumothorax for these diseases. The danger of artificial pneumothorax in cases of abscess is that the abscess may rupture and produce a pyopneumothorax. It has always seemed to me that this danger has been as much exaggerated as the danger of surgical treatment has been underestimated. With modern surgical technique operation in cases of abscess is less dangerous than it was some years ago, and if not yet safe is, I think, less dangerous than other methods of treatment in this most serious disease.

In this series there are eight cases of abscess of lung in whom a pneumothorax was induced and seven of them are now well in spite of the accidents which happened to two during the treatment.

There were eight cases of bronchiectasis, of these only two are now well and one of these had bilateral disease and both lungs were collapsed. One is alive but still has symptoms of bronchiectasis and five are dead.

The majority of these cases were patients at the Brompton Hospital, and my thanks are due to the lady almoner, Miss Marx, for keeping in touch with them.

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LIPODYSTROPHIA PROGRESSIVA

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THE first authentic case of lipodystrophia progressiva was reported by Barraquer [1] in 1906. He called the condition "atrophy of the cellulo-adipose tissue." Osler is credited with having seen a case in 1895 and given his records made at that time to Parkes Weber,[2] who published them along with notes of his own cases in 1917. In 1911 Simons [3] reported a case studied in detail and gave the name "lipodystrophia progressiva" to the condition. Some 85 genuine cases have so far been recorded. A number reported under this name are from their description not really lipodystrophia progressiva but belong to such disorders as facial hemiatrophy, subcutaneous fat atrophy (localised), and lipodystrophia cachexia (Pende-Simmonds).

THE SYNDROME CLINICALLY

The true disease lipodystrophia progressiva is characterised by a symmetrical loss of the subcutaneous fat, the disappearance of which commences usually in the face, and then spreads to involve the neck, thorax, upper extremities, and abdomen. In a few cases the face only remains affected; in others the face, arms, neck, and upper thorax; in still others the fat disappears almost down to the iliac crests. The breasts may also be involved and in female subjects are composed only of glandular tissue over which the skin is freely movable. Recognising the limitation of the fat atrophy usually to the upper half of the body, Marañon and Cascos [4] suggested the name "lipodystrophia cephalothoracica" for this type, wishing to emphasise thereby the commonest characteristic of the disease—namely, the fact that it is only the subcutaneous fat of the upper half of the body that disappears, whereas the fat of the lower half of the body remains intact or is even increased.

Progression is variable. Sometimes the process of fat disappearance is completed in less than two years; sometimes it continues for ten years before becoming arrested. Lipodystrophia progressiva is not hereditary, familial, or racial. The onset occurs usually in young childhood before the eighth year. It has been seen in a child of 2 [5] and in a woman of 55 years.[6] The condition is more than twice as common in females as in males. When the latter are affected the loss of fat is usually limited to the face. Almost fully developed cases in males are extremely uncommon, though two have recently been described [7 8] and bear a remarkable similarity to each other and to the two cases reported in this paper.

The progress of the lipodystrophy may be arrested at any level temporarily or permanently. Infectious disease and pregnancy have been known to accelerate the process. At puberty, with the manifestation of secondary sexual characteristics, increase of subcutaneous fat below the iliac crests becomes marked so that the body appears as if composed of the upper and lower halves respectively of two entirely different individuals. This clear-cut demarcation is well illustrated in Case 1 below (Fig. 1), and is very suggestive of an involvement in accordance with the nerve-root distributions of spinal segments.

When the condition is fully established, physical examination discloses a complete absence of subcutaneous fat in the affected parts. The skin, which

is of normal colour, feels thin and rides loosely over the underlying musculature which appears unduly prominent, giving a very masculine appearance to a woman's limbs. Muscular power is unimpaired, the bones, hair, and sweat glands are unaffected. A marked hollowing of the cheeks with undue prominence of the zygoma above the hollow is characteristic and with the pallor which is frequently observed lends a cadaverous expression to the face. The skin, which lies smoothly on the face, becomes rolled up into numerous folds at the corners of the mouth when the patient smiles. Simons' expression *Totenkopf* or death's head, amply describes the appearance of the face. These cases bear a remarkably close resemblance to one another. Once seen, or the clinical description firmly set in the mind, a case is unlikely to be missed. Affected patients are able to enjoy all the activities of healthy people and are usually able to carry on their ordinary duties. Children affected by this condition frequently experience difficulty in securing employment in later life on account of the somewhat forbidding appearance of extreme ill-health, but ordinarily they do not suffer any subjective symptoms. They come or are brought to a physician or hospital because of the marked emaciation of the face and thorax. The two cases reported below were discovered during the routine medical inspection of school-children.

Lipodystrophy limited to the lower limbs and pelvic girdle and not affecting the thorax or face and arms does occur occasionally but is unusually rare. Hugh Smith [6] reported a case in a woman, aged 55, in whom loss of subcutaneous fat in the lower limbs had been present for three years. Horton and Emmett [9] record a case associated with uræmia in a woman, aged 61, who asserted that the absence of subcutaneous fat over the pelvic girdle and lower extremities had been noticed all her life. Ziegler,[10] in a report on seven cases of lipodystrophia, includes one of a female, aged 27, who first lost the subcutaneous fat from the lower extremities and then from the entire body in two distinct attacks. The condition in this case was associated with splenomegaly, hepatomegaly, and diabetes.

PATHOLOGY

The blood chemistry in lipodystrophia progressiva is normal. Autopsies when carried out [11 12] have shown nothing of significance except the absence of subcutaneous fat and failed to reveal anything constant which might point to a factor in the ætiology. The skin is normal in histological structure except that there is complete absence of fat in the tissue beneath the corium. Fat persists in the sebaceous glands where part of it is doubly refractile. Such "fat" is, of course, really sebum, an epithelial degeneration product of the cells lining the sebaceous glands. True subcutaneous fat is deposited by the coil glands after filtration from the cutaneous lymphatics.

ÆTIOLOGY

In the reported cases the onset has frequently been associated with a history of infection, especially one of the acute specific fevers. Since, however, the condition takes some considerable time to become fully developed and since it is not as a rule recognised until fairly advanced, it becomes difficult to identify any particular factor as the actual starting-point in the pathogenesis.

Endocrine disorder, more especially of the pituitary or pineal bodies, is frequently put forward as the ætiological cause. The evidence in favour of such a view is, however, extremely slender.

Parkes Weber [13] suggests that since basophilic hyperpituitarism is accompanied by excessive development of subcutaneous fat in the face and trunk whilst the legs may be thin, it is just conceivable that in lipodystrophia the disappearance of subcutaneous fat from the face and often also from the trunk, occasionally with obesity of the legs and buttocks, may be due to a condition of basophilic hypopituitarism. The suggested explanation is too facile, and is unsupported by any actual facts.

A second theory, that the condition is a "trophoneurosis," has been mooted. This is supported by the fact that certain reported cases of lipodystrophia have been associated with phenomena indicating sympathetic disturbance, including such changes as trophic disturbances of the skin and nails, cutaneous pigmentation, acrocyanosis, abnormal perspiration, and erythromelalgia. Parkes Weber [14] would classify lipodystrophia progressiva with the congenital developmental dystrophies. He suggests that there is in this condition a redistribution of fat similar to the redistribution of pigment in vitiligo, and that as such it is the result of some disturbance of the vegetative nervous system. Such an explanation is, however, difficult to correlate with the complete and sharply defined absence of fat in the affected parts, or with the fact that the disease does not always follow the course of taking fat from the upper part of the body and adding it to the lower part.

FIG. 1 (Case 1).—Shows sharp line of demarcation at umbilical level between lipodystrophic upper and unaffected lower halves of body.

It is more probable that the disease is due to an interference with the normal deposition and incorporation of fat globules in the subcutaneous areolar tissue of the affected area. The fatty tissue of the corium and subcutis is laid down by the coalescence of fat globules filtered from the lymphatics by the coil glands of the skin. In lipodystrophia apparently this filtration function of the coil glands has become inhibited, although their sweat production remains unimpaired. It is conceivable that this disturbance of function is due to an alteration in the innervation of these glands. Of interest in this connexion is a case of "fat atrophy" reported by Sydney Thomson.[15] Here a unilateral absence of subcutaneous fat appeared in a distinctly zosteriform distribution, the bands ending absolutely in the midline and involving cervical segments 3 and 5 with thoracic 4 to 10. The epidermis was normal and there were no symptoms paræsthesial or sensory changes.

TREATMENT

Satisfactory treatment for this disfiguring malady has not been found. No case has been recorded in which the fat has returned. In attempting to increase the subcutaneous fat deposits these patients succeed merely in increasing the subcutaneous fat in those parts already well provided, so that the disproportion between the affected and the unaffected parts of the body becomes even more patent.

CASE REPORTS

CASE 1.—A youth, aged 11 years, has had a thin face since the age of 3 to 4 years. Photographs show that as a baby he was quite plump. There is no known antecedent cause to which the mother can attribute the condition, which definitely started in the face. The boy enjoys good health and plays all games. His intelligence is normal. At the age of 3 years he had measles and chicken-pox. He was jaundiced at 9 years. The family history reveals nothing relevant.

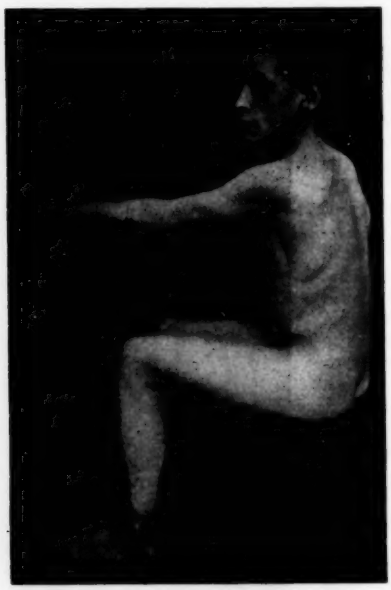

FIG. 2 (Case 2).—This photograph also shows the characteristic thin face and the absence of fat above the level of the umbilicus.

On examination the youth presents an extremely emaciated appearance. He admits that his schoolfellows call him Monkey Face. There is no palpable subcutaneous fat in the upper half of the body including the upper limbs down to the level of the umbilicus (Fig. 1). The skin is of normal colour and texture but may easily be pinched up to 1½ in. when it is seen to be translucent. The muscles of the upper limbs and thorax are unusually prominent. The face is small with the mouth pushed forward. Bony prominences, especially the malar bone, are unduly marked producing deeply hollowed cheeks. When smiling, a number of parallel furrows are produced round the angles of the mouth. The nails and teeth are normal. The lower limbs are well developed and powerful and plenty of subcutaneous fat is palpable over them. The hair covering the head is a "mousey" colour and fairly plentiful. He has no pubic or axillary hair. Both testicles are present in the scrotum. The urine and stools show no abnormality. Height and weight are normal for his age according to the tables of averages for local normal children. No other abnormal physical signs are demonstrable. The thinness of the upper half of the body contrasts very strikingly with the comparative plumpness of the hips and lower limbs. A sharp line of demarcation between the thin and the normal skin is visible at the level of the umbilicus (Fig. 1). The Wassermann reaction in the serum is negative. Radiography of the skull and skeletal bones reveals no abnormality.

Attempts to fatten this child by generous diet have failed to improve the appearance of the affected skin.

CASE 2.—Male, aged 11 years, suddenly became thin in the face at 5 years of age, apparently after an attack of chicken-pox. Until then he had always been well and a photograph taken at the age of 4 shows him with a chubby face. He had measles at 2 years. He leads an active, healthy life and presents no symptoms. Like Case 1 he was discovered during routine school medical inspection. His mother averred that she had tried many "remedies" without any benefit. There is nothing noteworthy in the family history.

The boy on examination (Fig. 2) is a typical case of lipodystrophia progressiva affecting the face, neck, arms, and trunk to the level of the umbilicus, in all detailed respects exactly similar to Case 1. Apart from the absence of subcutaneous fat no abnormal physical signs were elicited. The serum Wassermann reaction and radiography of the skull and bones of upper limbs were negative.

My thanks are due to my colleague, Dr. Gwladys Davies, for drawing my attention to the second case and to my chief, Dr. J. D. Jenkins, for permission to publish these cases.

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BENIGN STRICTURES OF THE RECTUM *

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THERE are many and varied causative factors in the production of simple strictures of the rectum.

Congenital strictures are usually the result of inadequate union between the proctodeal invagination and the hind-gut proper. Any degree of obstruction, from stenosis of the anal orifice up to complete atresia of the anal canal, may be present. Imperforate anus may be associated with absence of a portion or the whole of the rectum. Operations on such conditions in early life may be followed by marked stricture formation.

I have had a case of this nature under my care: A child about 6 years old had been operated upon soon after birth for imperforate anus. The rectum was represented by a long tubular stricture, associated with complete incontinence of fæces. It was found necessary to establish a permanent colostomy.

Acquired strictures may be classified as (1) spasmodic and (2) organic. The former are uncommon, but undoubted cases of spasm of the sphincter muscles without any obvious causative factor have been described from time to time. Of course, such spasmodic strictures are very commonly associated with fissures and any form of ulceration in the anal canal.

VARIETIES OF ORGANIC OR FIBROUS STRICTURE

Traumatic strictures may follow accidental wounds of the anal canal and rectum—e.g., sitting on a

* Post-graduate lecture given at St. Mark's Hospital.

spike, gunshot wounds—in which anal or rectal tissues are lost at the time of injury or else subsequently slough as the result of sepsis. Under this heading must also be included strictures of the rectum following labour, in which sloughing of the rectal wall occurs as a result of pressure between the child's head and the promontory of the sacrum. They are usually about 2 to 2½ inches above the anus.

Post-operative strictures.—The removal of internal piles by operation may be followed by a greater or lesser degree of fibrosis and contraction of the lumen. This is especially the case if large bare areas of submucous tissue are left after removal of piles. This is very likely to happen after Whitehead's operation, and is due to giving way of part of the line of suture of the mucous membrane to the anal skin. The mucous membrane retracts, leaving a large bare area which undergoes cicatrisation and contraction. Similar stenosis may follow any method of operation for internal piles, especially the high-stripping operation. The occasional judicious passage of a well-vaselined finger during convalescence will often obviate this unpleasant sequela.

The use of strong chemical solutions in the injection treatment for piles has also been responsible for sloughing of the rectal wall with subsequent stricture formation. Similarly, strictures have been known to follow the giving of an enema in which the fluid was too hot, ulceration and fibrosis resulting. In the pre-antiseptic days, ulceration of the rectum very commonly followed any rectal operation, but this is most unusual with modern methods.

Fistula operations, if associated with much sepsis, may be followed by rectal stricture. I have a patient in hospital at the present time who, as a result of several operations for fistula elsewhere, has a well-marked stricture, necessitating a colostomy.

Gonorrhœal proctitis is due to direct extension from the genital passage as a rule, and is most commonly found in women. Sir Charters Symonds, in a presidential address to the subsection of proctology of the Royal Society of Medicine in 1923, lays stress on gonorrhœa as a common cause of fibrous stricture of the rectum in women. He examined 38 specimens of stricture apparently of this nature in the various hospital museums in London and at the Royal College of Surgeons; 27 of these were from women, 6 were from men, and 5 were unspecified. They were all of the same type (to be described later). Owing to the proximity of the anus and vagina, one would naturally expect gonorrhœal proctitis to be more common in women. Lockhart-Mummery thinks it unwise to label such strictures as being due to any specific cause. He believes that they result from neglected chronic sepsis, due to any cause.

Syphilis has been cited in many text-books as a common cause of fibrous stricture of the rectum. There can be no doubt, however, from Sir Charters Symonds's investigations, that many cases previously labelled as syphilis are in reality gonorrhœal in origin. In an address delivered before the Medical Society of London in 1922, Prof. Henri Hartmann stated that out of 86 cases in his own practice 50 were in women and 36 in men. Carre, as mentioned in his thesis, in a series of 266 cases found 210 in women and 56 in men. In Hartmann's 86 cases syphilis undoubtedly existed in 30. He states that this frequency of syphilis in patients suffering from strictures of the rectum is nowadays acknowledged by all who have studied the question. There are many authorities, however, who are still doubtful as to the part played by syphilis in the production of rectal strictures. Charters Symonds showed that many specimens labelled as syphilitic in the various museums of London were certainly of gonorrhœal origin. Very few cases of undoubted syphilitic strictures have been seen at St. Mark's Hospital. It does not follow that a stricture is necessarily syphilitic because the patient happens to be suffering from syphilis.

Lockhart-Mummery emphasises these points and regards simple strictures of the rectum as always due to "chronic ulceration of the rectum and sepsis," and only rarely to syphilis, either directly or indirectly. It is stated in Thomson and Miles's "Manual of Surgery" that:—

> "The commonest cause of non-malignant stricture of the rectum is a chronic pyogenic infection, probably in most cases of gonococcal origin. The proportion of syphilitic cases has been exaggerated on account of the tendency to attribute to syphilis all strictures in which no other definite cause can be described."

Charters Symonds sums up the matter in the following remarks:—

> "The chief reason in favour of this form of rectal ulceration and stricture being determined by a local cause is its prevalence in women; clinically I have never seen it in men. The easy access of discharges from the vagina to the rectum in women is obvious. I am not prepared to deny that the secretions from chancres do not determine the ulceration, but I would submit that the disease is due to local and not constitutional causes, otherwise it would occur as frequently in men as in women. Nor can it be asserted that syphilis is wholly absent, and it is possible that local irritation may determine a syphilitic deposit. Gonorrhœa is a far more frequent infection than syphilis, and the well-known tendency to the formation of cicatricial contraction is seen in the male urethra. Again, the occurrence of adhesions of the Fallopian tubes and ovaries found in these cases, supports the view that gonorrhœa has existed."

H. S. Stannus regards an infection with the *ultramicroscopic filtrable virus*, which is responsible for the development of "climatic bubo" and "lymphogranuloma inguinale," as an important factor in the production of inflammatory strictures of the rectum. In his opinion the so-called syphilitic and gonorrhœal strictures are really due to an infection with this virus.

Inflamed and sloughing internal piles may be followed by ulceration-fibrosis and subsequent cicatricial contraction of the anal canal and rectum.

Tuberculous stricture is very rarely met with in the rectum, but is more common in the colon. Hartmann found 10 patients, in a series of 86, in whom pulmonary tuberculosis existed before the first symptoms of stricture. This does not, however, justify the conclusion that such strictures are of tuberculous origin.

Chronic ulcerative colitis.—It is now well known that stricture may follow chronic ulcerative colitis. Similar lesions may also be present in the rectum as a result of chronic ulcerative proctitis, a condition usually associated with ulcerative colitis.

Dysentery is a rare cause of stricture of the rectum. Several cases have, however, been described, and I have myself seen one case which was apparently of dysenteric origin. One would have expected that extensive and severe ulceration of the bowel, such as is found in dysentery, would often be followed by stricture-formation, but it is unusual.

Bilharzia may produce ulceration of the rectum, rarely followed by stricture.

Under the heading of *strictures following perirectal inflammation* must be placed all varieties of pelvic cellulitis, and also perirectal fibrosis following the application of radium for uterine affections. Proctitis

is a not uncommon sequel to the radium treatment of uterine carcinoma or menorrhagia, and it may be followed by the formation of dense fibrous tissue both in the coats and outside the wall of the bowel.

I had a patient recently who developed acute intestinal obstruction, the result of a fibrous stricture of the rectum, due to applications of radium for carcinoma of the cervix uteri. This necessitated a colostomy. In due course the fibrous tissue resolved, and it was found possible to close the colostomy.

PATHOLOGICAL FEATURES OF FIBROUS STRICTURES OF THE RECTUM

The strictures may be single or multiple; they may be annular, cylindrical, funnel-shaped, or irregular. They usually affect the lower three or four inches of the rectum, including the anal margin, and may reach into the pelvic colon. There is no ulceration of the actual lining membrane of the stricture, where the ordinary cylindrical type of epithelium has been replaced by a pavement epithelium; ulceration, if present, is usually above the stricture, but may also be below.

The stricture involves the whole circumference of the bowel, and is characterised by bands of indurated and fibrotic muscle, between which are pockets, from the bottom of which fistulous tracks may lead to the surface in the anal region or into the vagina. The extreme narrowing occurs at several points, and will often prevent the passage of even a small bougie. One characteristic feature is the presence of hard polypoid growths ringing the anal margin, a condition said to be typical of gonococcal stricture of the rectum. In old fibrous strictures, polypi may form immediately above the stricture. These may develop long pedicles and project through the stricture.

The bowel above the stricture is dilated and the mucous membrane catarrhal or ulcerated. Below the stricture the bowel is often ballooned owing to paralysis of the muscular coat. If the constriction is low down, the tone of the sphincters is lost; the anus becomes patulous, the mucous membrane prolapses, and there is loss of control.

COMPLICATIONS AND SYMPTOMS

Complications may be classified as follows: (1) perirectal suppuration and fistulæ; (2) ulceration of the mucous membrane above the stricture; (3) perforation of a stercoral ulcer above the stricture; (4) chronic intestinal obstruction, sometimes ending in acute obstruction due to blocking of the stenosed bowel by fæcal impaction, &c.; (5) cancer has been described as supervening upon an inflammatory stricture.

Clinical features.—The age-incidence is 20 to 40 years, and females are affected more often than males. The symptoms include an increasing mucopurulent and blood-stained discharge; a feeling of fullness and of "something in the rectum"; and frequent and ineffectual actions of the bowels, with "spurious diarrhœa." If the stricture involves the anal canal, as it often does, then incontinence of fæces is superadded, and there may be wasting and toxæmia. Too much importance should not be attached to the shape and size of fæcal material passed. A soft mass of fæces must take its shape from the last orifice through which it passes—i.e., the anus. Unless, therefore, the stricture is close to the anal margin, the shape of the excretion can have no clinical significance.

PREVENTIVE AND PALLIATIVE TREATMENT

Preventive treatment implies rigid and early attention to any form of proctitis and to the cause. Palliative treatment resolves itself into dilatation, which may be rapid or intermittent. This must be undertaken with the utmost care, since serious or fatal accidents have resulted. These are due to splitting of the stricture with the perirectal spread of infection leading to cellulitis and septicæmia, or even to peritonitis if the stricture is above the peritoneal reflection. I know of one case in which the injudicious passage of a sigmoidoscope, under an anæsthetic, led to perforation of the thinned bowel above the stricture, the instrument entering the peritoneal cavity.

The dilators used should be either soft flexible rubber bougies or graduated metal dilators. Dilatation may have to be done at several sittings. Stretching of a stricture is usually a painful process, necessitating the use of an anæsthetic. When the stricture has been successfully dilated the patient may be given a dilator of suitable size and instructed how to pass it himself daily.

OPERATIVE TREATMENT

Internal proctotomy is indicated in small annular strictures, especially those in which a well-marked diaphragm is present. The stricture is partly divided by means of a blunt-ended bistoury guided by a finger in the rectum. The division should be made in several places and in a posterior or postero-lateral direction. This is followed by gradual dilatation with graduated metal dilators. The patient must continue to pass a dilator himself regularly for some weeks subsequently.

External proctotomy or posterior linear proctotomy.—In this operation the stricture, together with the rectal wall, anus, and overlying tissues, are all divided. Such an operation is comparable with external urethrotomy. It is suitable for strictures within three or four inches of the anus and those of the cylindrical or funnel-shaped varieties. Temporary incontinence will follow, but the final results as a rule are encouraging. The operation affords good drainage, which is a point of great importance in rectal operations. Mr. Swinford Edwards considers it safer than internal proctotomy because of the better drainage established. It must, of course, be followed by the regular and systematic use of dilators for some considerable time.

Excision of the stricture is the operation favoured by Hartmann. The preliminary steps are similar to those of a Whitehead's operation. After dissecting up a cuff of mucous membrane, the bowel wall is divided above the sphincters. The rectum is isolated and freed to well above the upper limit of the stricture. (The peritoneal cul-de-sac may have to be opened in certain cases.) The portion of strictured rectum is excised and the cut end of bowel brought through the sphincters and sutured to the anal skin. Drainage is established by making a counter-opening in one or both ischiorectal fossæ in order to drain the postrectal space. Such an operation may be exceedingly difficult on account of perirectal fibrosis, but Hartmann has had good results. Colostomy followed by removal of the coccyx and perineal excision of the rectum as for carcinoma may be deemed advisable. In certain cases it has been found possible to leave the sphincters intact and to bring down the cut end of the bowel through the sphincters to the anal margin.

Again, the rectum may be exposed posteriorly by a perineal incision and removal of coccyx, the strictured portion may be excised, and an end-to-end anastomosis of the divided portions of bowel may be established. Adequate perineal drainage must be provided, since a temporary fæcal fistula often results.

Colostomy may be temporary, in order to divert the passage of fæces, and so allow the ulcerated rectal mucous membrane to heal; as soon as the rectum is clean, the stricture may be dilated and

finally the colostomy closed. On the other hand, a permanent colostomy may be necessary. This is advisable in cases of long tight strictures with much perirectal infiltration and loss of sphincteric control. A patient is much more comfortable with a colostomy working well than with constant rectal discharge and incontinence of fæces, let alone the danger of severe ulceration and perforation.

Certain other methods have been described for the treatment of fibrous strictures of the rectum—e.g., metal bulbs to which the negative pole of a galvanic current is attached. The galvanic current is said to favour the absorption of fibrous tissue. Negative ionisation, associated with dilatation with bougies, has also been advocated. Injections of fibrolysin have been tried without much success.

CUTANEOUS AND OTHER COMPLICATIONS OF CHRONIC ALVEOLAR INFECTION

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THE PATIENT'S STORY

(BY DR. SEMON)

IN November, 1929, the extraction, under local anæsthesia, of a devitalised first right upper molar tooth opened the antrum and initiated a group of symptoms which persisted almost continuously for three and a half years.

Although subject previously to recurrent furunculosis, limited to the neck at the collar margin, I had enjoyed good health, even when the boils—which seemed to vary with the effect of smoking on a pair of unhealthy tonsillar stumps—were active. The antrum first displayed clinical evidence of infection in December, 1929, and acting on medical advice I took a holiday of six weeks in the dry air of Egypt. A second more severe attack of antral infection, with copious purulent discharge, made it clear, however, that surgery was needed, and in April, 1930, the antral fistula was well scraped and some necrosed bone removed. The resulting channel between the mouth and the antrum was large enough to admit the tip of the little finger. It was thought that the sinus would now heal but it did not do so, and in October a second attempt to promote healing, by intranasal antrostomy and removal of a small portion of the inferior turbinate, also failed—the stitches closing the sinus cutting through in 48 hours.

I continued to have occasional attacks of antritis, although I was now able to wash out the antrum myself, and the furunculosis showed an alarming propensity to increase locally on the neck, and to appear in the nasal choanæ, the aural meatuses, and occasionally on other parts of the body, such as the wrists, buttocks, and scalp. My general health also showed signs of deterioration. Often a few hours before the appearance of a fresh infection I suffered from nausea, sleeplessness, and a curious feeling of restlessness and anxiety, which was increased by the gradual development of precordial pain and tenderness; memory and the power of concentration were also affected. Various general measures—including vaccines both stock and autogenous, actinotherapy, colloidal manganese injections, a course of careful dieting, intestinal lavage, and yeast by the mouth—were tried from time to time. The little relief they afforded was only temporary, the general symptoms and the boils persisted in monotonous sequence, with occasional attacks of antritis and sore-throat.

TWO FURTHER OPERATIONS

The latter symptom was thought to have a bearing, and it was even suggested that the antral sinus might close if the tonsils were enucleated. Accordingly in August, 1931, this, the third operation of the sequence, was performed. I was in some degree rewarded by a temporary cessation of the recurrent boils, and the complete relief—to the present day—of the recurrent attacks of tonsillitis. A culture from one of the tonsils, which contained calcareous deposits, yielded a pure growth of *Staphylococcus aureus*, unlike the previous cultures from the right antrum, from which both *Streptococcus hæmolyticus* and staphylococci had been grown. A culture from the pus in a boil produced the same organisms, and on another occasion streptococci only. (This is interesting considering the generally accepted views on the causal organism of furunculosis.) A blood-sugar curve, performed about October, 1931, revealed no abnormality.

After comparative quiescence for about two months all the symptoms (except the pharyngeal) returned with renewed vigour, and a differential blood count revealed a relative leucopenia. Further dental opinion resulted in the extraction of several carious teeth, from the apices of which the same organisms were grown, and a further trial of vaccines was made without success.

In December, 1931, a well-known continental rhinologist examined me in London and very kindly invited me to his clinic, where he proposed to open the antrum through its anterior wall, and if found necessary to strip the mucous membrane lining it. It was not until April 1932, when I had made trial of every measure that the kindness and ingenuity of medical friends and colleagues could devise, that I accepted the offer and submitted to this, the fourth, surgical attempt to relieve me. The operation, under local anæsthesia—a rather unpleasant procedure—proved that the mucous membrane was quite healthy, and the surgeon contented himself with removing a small ridge of bone above the antral opening of the sinus, which he thought might be retaining secretions and thus preventing closure. The wound was stitched up in its entirety, obliterating the sinus. But on the fourth day it broke down, with the production of fever, much pain locally, and a fœtid discharge. On leaving the clinic a fortnight later I was in statu quo as regards the antrum and its buccal communication, and with a number of boils, which had been present on my arrival, still freely suppurating.

THE INFECTED ALVEOLUS

A recurrence of the local pain, with a perfectly dry antrum, in March of this year convinced me that my symptoms must be the result of alveolar bone infection, although radiograms taken at this time did not conclusively prove it, and three eminent opinions were opposed to the theory and strongly advised against any further surgical interference. I therefore consulted Mr. Leslie Wright whose work in this sphere much interested me. A careful series of radiograms which he took himself convinced him that there was a very definite infection of the alveolar process of the upper jaw, and in order to prove it and gain antecedent knowledge of the state of the bone, he opened up a small chronic and quite "silent" abscess cavity round an old root fragment in the region of the first *left* upper molar tooth, removed ten or more years previously. From this, under extraordinary precautions against contamination, a heavy growth of streptococci and a few staphylococci were obtained by Dr. Dennis Embleton, and a vaccine was prepared.

The resultant effect both on the cutaneous sepsis and general symptoms was most gratifying, although the focus dealt with was several inches from the main body of the infection round the sinus. For nearly a month there were no boils, I slept better, and my antrum remained quiescent. I was much encouraged to undergo the operation of alveolectomy which Mr. Wright considered essential if a cure of the sepsis and closure of the sinus were to be attained. It was performed on June 27th, and the remaining seven teeth which had held the dental plates in upper and lower jaws were extracted.

Recovery was uneventful. Although furunculosis is still troublesome, the mental depression, insomnia, nausea, and other general symptoms have entirely disappeared, while, most significant of all, the antro-buccal sinus has healed, an attainment which would have been frustrated in the presence of persistent local infection of the alveolar processes.

The cutaneous features of this chronic infection were somewhat unusual. In modern parlance we

may say that the skin had become sensitised to the predominating organisms, which were demonstrated over and over again in the root apices of dead teeth, in the antrum, and finally in a closed "cold" abscess in the alveolar process. The significance of the latter can hardly be over-estimated. There was hardly any sclerosis of the bone surrounding this neglected root fragment, for a few granulations can hardly be regarded as an effective barrier to circulatory invasion. The anatomical seat of the "boils" furthermore was on many occasions observed to be extrafollicular. They were not, as always in the common boil, infections of hair follicles. Not infrequently their appearance was heralded by general symptoms very suggestive of blood infection, and although an attempt to grow organisms from the blood failed, we cannot on this account rule out the possibility of a bacteræmia, nor is this impossible in the absence of rigors and high fever, which are the usual accompaniments of well-developed septicæmia. Positive blood cultures are notoriously rare, except in the terminal phases, while the possibility of blood infection without general symptoms has been proved in the case of tuberculous and mycotic infections of the skin. The probability of embolic manifestations in this case is further supported by the recovery of identical organisms from the foci in the alveolus, the root apices, the tonsils, and the skin. Not a few cases of fatal septicæmia following extraction of one or more teeth have been reported.

While we cannot of course draw any conclusions from the results in a single case we are perhaps justified in emphasising the dangers of infected, and particularly dead, teeth in creating progressive bony foci in the alveolus. The possibility of this in the absence of definite radiographic confirmation does not seem to be sufficiently recognised either by dentists or by the rhinologists whose function it so often is to deal with the secondary infections of the mucous membranes in the antrum and ethmoid cells and the like. There are many persons going about to-day with unhealed dental fistulæ, and although the majority have no other symptoms, the persistence of such an abnormality ought not to be regarded as unimportant. Its significance is the associated alveolar infection which prevents and precludes closure, and undoubtedly increases the risk of recurrent antral infection and all the associated complications which may supervene from that misfortune. I am firmly convinced that but for the radical intervention in my own case septicæmia must have eventually supervened.

I am not yet cured. There is still a tendency to furunculosis and slight occasional pain in the region of the old sinus. But I was warned that I could not expect complete recovery under a year, and with my general symptoms relieved and an increasing energy I am content to wait. My gratitude to the operator and my admiration of his skill and unceasing care in after-treatment can hardly be expressed in words.

THE SURGEON'S FINDINGS

(By Mr. Wright)

Dr. Semon first consulted me on April 20th, 1933, giving the history he has recorded above. A clinical examination supported my suspicion of deep-seated alveolar infection of both the upper and lower jaw.

In the upper jaw the only remaining teeth were the two canines and right premolar. These had considerably deepened in colour, from chronic periodontal disease, and the gingival spaces exhibited calcareous deposits on the root surfaces resulting from the alveolar bone infection. Occupying the site of the right first molar there was a sinus leading from the antrum to the vestibule, high up in the sulcus, and passing over a rather thick and deep alveolar ridge. Inflamed scar tissue extended forward from the region of the sinus towards the canine and through the canine fossa, and the buccal and palatal mucosa on this side were decidedly hyperæmic. Although the dentures were comfortable and well fitted, the patient complained of recurrent aching and tenderness of the bone in the region of the sinus. The remaining teeth in the lower jaw (left canine to right second premolar) presented the same condition. The premolars and canines were considerably decalcified at the gingival margin, and all the teeth were abnormally hypersensitive to all attempts to scale them. The distinctive hyperæmia of alveolar infection was present here too.

I made radiograms which proved chronic inflammatory root-tissue changes, with destruction of the alveolar bone at the margins to a varying degree, but principally chronic inflammation and infection of the alveolar bone. This I considered was very marked in the right upper alveolar process. On the left side a small fragment of an old root presented an area of rarefying osteitis around it.

I was confident that the infection of the dental structures was paramount in the causation of the marked degree of toxæmia described. The history was quite consistent with "bacterial storms" or recurrent bacteræmia, and, in view of the clinical aspect, and repeated bacterial investigations, I advised a complete upper and partial lower alveolectomy. The result of my investigations on the derelict root fragment has already been described. It may be confidently asserted that it is extremely rare to find pus cells and staphylococci mixed with a heavy streptococcal infection so completely and "silently" enclosed in bone tissue.

The small cavity left by removal of the root was easily obliterated, and the covering flaps of mucous membrane healed by first intention. At a later date and under local anæsthesia I removed the four lower incisors and freely excised the buccal alveolar plate, scraping out the trough of soft infected bone below the apices, and lingual to the apical aspects of the roots. Healing was again quite prompt and afforded some relief to the general condition. It was felt that some measure of protection against a generalised infection had been secured.

On June 27th, under general anæsthesia, I completed the upper alveolectomy. The right upper canine was extracted and a submucous incision from the socket of this made as far back as the tuberosity along the lowest part of the alveolar ridge. The reflection of the cheek flap was considerably impeded by the scar tissue resulting from previous operations. The outer alveolar plate was removed in this area, and on reaching the site of the first molar—the extraction of which had resulted some 3½ years previously in the production of the inveterate antro-buccal sinus—I found the whole of the alveolar process and the antral floor in an advanced degree of rarefying osteitis. A large mass of bone came away in the fingers leaving a base of thickened mucous membrane as large as a halfpenny, very thick, scarred, non-vascular, and resistant to pressure. This scar tissue formed the walls of the old sinus, and a blunt dissector inserted from this point into the antrum made it clear that the lower end of the sinus had been attached to the septic bone just removed. It was freely cut away from the buccal mucosa and its inner end thoroughly curetted. After clearing out the rest of the infected alveolar bone, which extended right round to the left canine area, the free end of the sinus was stitched as far forwards as the site of the canine, and the flaps sutured in position with two small B.I.P.P. gauze strips inserted for drainage. The remaining lower teeth were then extracted and a similar clearance of infected bone completed in the lower jaw.

Recovery was rapid and afebrile. Lavage of the antrum through the enlarged nasal aperture evacuated nothing but a little blood and no suppuration followed. The sloughing of two stitches through the buccal end of the

sinus left a deep cavity with the antral mucosa as its roof, but granulations soon filled this in and after about five weeks resulted in complete obliteration of the cavity and an effective closure of the communication between the mouth and the antrum.

The improvement in the general health was more rapid and pronounced than I have usually experienced in cases of this type. Further improvement should accompany absorption and consolidation in the alveolar processes during the ensuing months. Dentures were fitted and well tolerated about five weeks from the date of the operation.

The case confirms my conviction that a successful closure of persistent antro-buccal sinuses can only be achieved after removal of the teeth and thorough excision of the infected alveolar bone in the vicinity.

Clinical and Laboratory Notes

ERYTHROCYANOSIS CRURUM PUELLARUM FRIGIDA

A CASE TREATED BY LUMBAR SYMPATHECTOMY

By J. B. Oldham, F.R.C.S. Eng.

SENIOR ASSISTANT SURGEON, NORTHERN HOSPITAL, LIVERPOOL; SENIOR SURGEON, BIRKENHEAD GENERAL HOSPITAL; CONSULTING GENERAL SURGEON, HOSPITAL FOR WOMEN, LIVERPOOL

Mr. Dickson Wright, in his paper on Vascular Diseases of the Extremities which appeared in THE LANCET of Dec. 2nd, states that there is no record of a case of erythrocyanosis crurum puellarum frigida having been treated by sympathectomy. I am, therefore, encouraged to report the following case:—

Miss A., aged 32 years, a shop assistant, was referred to my clinic at the Northern Hospital, Liverpool, on April 4th, 1932. She complained of swelling, discoloration, and coldness of the lower parts of her legs. She said that the swelling of the legs had started, about five years previously, at the back of each ankle, just above the level of her shoes. From the beginning she had noticed that the swollen parts were extremely cold, but it was only during the last two years that she was aware that her feet and legs were very blue. At no time had she been conscious of any itching or tingling. The swollen parts were painful only in cold weather, and did not interfere with her walking. There had never been any ulceration of the skin. According to the patient the swelling and discoloration were steadily becoming more marked.

There was no history of previous illnesses, and nothing special was noted on examination of abdomen, thorax, mouth, urine, or blood. Menstruation was normal.

The legs presented symmetrical swellings over their lower and back parts. These swellings started abruptly immediately above the level of her shoes. Above, the swellings gradually diminished and disappeared at the junction of the middle and lower thirds of the legs. Most pronounced posteriorly, the swellings extended round towards the front of the ankles. There was no swelling of the feet or toes. Over the lower part of the tendo Achillis each swelling was about three-quarters of an inch thick. There was no pitting on pressure. The toes and the back parts of both swellings were very cold and were bluish-violet in colour. Pressure over the discoloured areas caused them to become pale, but the blueness returned immediately the pressure was released. There was no sign of chilblains nor ulceration of the skin. Cutis anserina was not observed. The dorsalis pedis, posterior tibial, and other arteries of both legs were pulsating normally. A mild degree of flat-foot was present on both sides. The Wassermann reaction was negative.

On May 5th the patient was admitted into hospital, and the surface temperatures of the legs and toes were observed before and during spinal anæsthesia (see Table). Under the anæsthetic the toes and swellings became warm and the blueness was replaced by pinkness. It was explained to the patient that lumbar sympathectomy would perpetuate the condition which had been produced temporarily by the spinal anæsthesia, but would probably have no effect on the swellings. She asked us to carry out the operation.

Table showing Skin Temperature Readings in Degrees Centigrade

—	May 5th. Room temperature, 19·5° C.				June 9th. Room temperature, 20° C.	
	After exposure for 1 hour.		After spinal anæsthetic.		(Post-operative.)	
	R.	L.	R.	L.	R.	L.
Patella	27·0	27·0	33·2	33·8	33·0	33·6
Back of ankle ..	22·5	23·5	34·0	34·5	34·0	34·2
First toe	18·5	20·0	33·0	33·2	33·2	33·4
Second,, ...	19·5	20·0	33·2	33·2	33·6	33·4
Third ,, ...	19·5	20·0	33·75	34·0	33·8	34·2
Fourth,, ...	20·0	20·0	33·8	34·2	34·0	34·0
Fifth ,, ...	20·0	20·2	34·0	34·6	34·2	34·8

R. = right; L. = left.

On May 10th, under spinal anæsthesia, a bilateral transperitoneal resection of the second, third, and fourth lumbar ganglia was performed. Convalescence was normal. After operation the feet and legs remained warm, pink, and dry. Ten to twelve days after operation desquamation started on the soles of both feet, but was never marked, and had disappeared by the time the patient was discharged four weeks after operation. For the first few days after operation the skin over the swellings was a bright red colour, but it gradually assumed a normal skin hue. The surface temperatures on June 9th are shown in the Table.

I have not had an opportunity of examining this patient since she left hospital, for she lives a long way off and, on account of her employment, cannot travel up to Liverpool. I have, however, heard from her at intervals, and on Dec. 5th of this year she writes to say that the feet and legs remain warm and pink, and though she does not think the swellings have gone down, yet she is certain that since operation the increase in growth, which had previously worried her, has ceased.

ABDOMINAL CATASTROPHIES WITHOUT SHOCK

By Rufus C. Thomas, F.R.C.S. Edin.

CHIEF MEDICAL OFFICER TO HIS LATE HIGHNESS THE MAHARAJA JAM SAHEB OF NAWANAGAR, INDIA

THE following cases both show an extraordinary absence of shock after injury producing acute abdominal conditions requiring immediate operation. In both the recovery was rapid and free from anxiety.

CASE 1.—A Mohammedan labourer had been unloading bags of sugar at Bedi Port. A crane with a load of several bags swung too far, and he was pinned against the buffer of a railway truck. When picked up he was found to have sustained a rupture of the right rectus muscle, and a considerable portion of the intestine was protruding from the wound. His fellow-workers wrapped a turban round the intestines and brought him up to the hospital, a distance of about three miles, on a lorry.

I saw him about 15 minutes after his arrival. He was in almost no pain, his pulse was quite slow, and there was a complete absence of any signs of shock. The turban had not been removed. The degree of cleanliness of this article can be imagined when I say that it had been on

the head of its owner all day while he was unloading sugar, and had probably not been washed for several days.

Under an anæsthetic the protruding gut was washed with normal saline, followed by 1 in 5000 hydrarg. perchlor. The wound was then enlarged, and on further examination I found the small intestine almost cut across in two places. On either side, two patches of gut were very badly damaged, though not actually ruptured. The whole of the damaged intestine was resected and an anastomosis done, side to side, about 2 ft. of gut being removed. The area round the site of the anastomosis was then swabbed out with swabs wrung out in saline, two pints of saline run in, and the wound closed completely after cutting out the damaged edges.

His condition throughout the operation gave rise to no anxiety, and was quite satisfactory that night. When I saw him the next morning, I found he had been anxiously waiting my arrival to ask if he could have his ordinary meal, as he was feeling very hungry. He complained of nothing except a little tenderness around the wound. He was given an ounce of liquid paraffin daily after the second day, his bowels acted normally on the fourth day, and he left the hospital on the twenty-first day at his own request. For three months he did no work, but walked up to the hospital every ten days or so to show himself. He then recommenced work unloading bags, and took every opportunity of proudly displaying his wound and recounting his story to any visitor to the port.

CASE 2.—The second patient was a Hindu woman, aged about 30. She had never been ill in her life before, so she said. Her history was that she had been grinding millet in her house, preparatory to making bread, squatting on the ground in the usual way. In the course of her work she was seized with a sudden attack of abdominal pain, but waited until it passed off, and then continued her work. The next day she noticed a fullness in the lower abdomen, with a little pain, which became worse as the day wore on. She then went to the dispensary, and was sent to the hospital. On examination her abdomen was tender, with some lower abdominal rigidity. Per vaginam there was a boggy feeling, with nothing else definable, except that the uterus was pushed right down towards the vulva.

On opening the abdomen it was found to be full of blood, and after clearing this out bilateral ovarian tumours, split completely across and bleeding slightly, were revealed. They were removed as quickly as possible, clots wiped out, two pints of saline put into the abdomen, and the wound closed. She was given saline per rectum through the night, and the next morning was in very good condition. Her recovery was uneventful. The tumours were submitted to the Haffkine Institute for examination, and were reported to be sarcomata.

These two cases show a remarkable lack of the shock one would rightly expect after such severe abdominal catastrophies, and their rapid and easy recoveries were as unexpected as they were gratifying.

EXCISION OF A TRAUMATIC STRICTURE

BY H. L. ATTWATER, M.Chir. Camb., F.R.C.S. Eng.
HON. ASSISTANT SURGEON TO ALL SAINTS' HOSPITAL FOR GENITO-URINARY DISEASES, LONDON; AND

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LATE SENIOR HOUSE SURGEON AT THE HOSPITAL

A MAN, aged 48, sustained a ruptured urethra in April, 1932, as a result of a motor-cycle accident. He was treated in the country by external urethrotomy. A perineal fistula developed, however, and when seen at All Saints' Hospital in September, 1932, he had an impassable and impermeable stricture, and a perineal fistula through which he was passing all his urine; the sphincteric control was good. In October, 1932, a suprapubic cystostomy was performed, and the patient sent home for the time being. In January, 1933, he was readmitted for excision of the stricture.

A Wheelhouse staff was passed from the external meatus and a metal sound retrogradely from the internal meatus. The perineum was incised upon the points of these instruments, and it was then found that the torn ends of the bulbar urethra were widely separated by dense fibrous tissue, the anterior segment in addition being displaced laterally. The fibrous tissue was excised and the urethral ends freed. The largest gum-elastic catheter that would enter the external meatus (30 Charrière) was then passed into the bladder. No attempt was made to suture the urethra; a flavine and paraffin dressing was applied and the bladder irrigated daily. The suprapubic tube was retained.

The perineal wound healed rapidly. An attempt to change the catheter failed, the tip of the new catheter engaging in a pocket; the same cause prevented the passing of a guide. A guide was passed retrogradely from the bladder with ease, and to its screw end was attached the screw end of a second guide. When this latter appeared at the external meatus the eye of a catheter was tied to it and thus caused to enter the bladder.

To facilitate subsequent changing of the catheter the following procedure was adopted: The bladder end of the catheter was made to appear through the suprapubic wound and a piece of stout silk threaded through the two eyes, after which the catheter was returned to its normal position in the bladder, and the suprapubic tube reintroduced. The end of the silk was tied to a spigot lying in the suprapubic dressing, thus giving a means subsequently of pulling the eye of the catheter on to the surface again.

After this the catheter was changed weekly, as follows: (1) Expanded external end of catheter cut off. (2) Rubber tube 18 in. long (about 12 to 15 French gauge) sutured to cut end of catheter. (3) Suprapubic tube removed. Traction on silk caused catheter to appear eye end first, followed by rubber tubing. (4) Eye of new catheter pushed firmly into lumen of other end of tube. Further traction on tube caused new catheter to enter urethra and bladder. (5) Eye of new catheter made to appear on surface of abdomen, and a silk thread tied to it as before, ready for the next change.

Although the perineal wound was superficially healed in five weeks, the catheter was retained and changed weekly until the urethra was felt to be smooth and free from any pockets. On May 9th the suprapubic tube was removed, and on May 19th the catheter. Following this, dilatation was continued weekly, at first with steels (24/28 French) and later with a Kollman's dilator (37 F.).

The patient was discharged on June 2nd to the out-patient department; urinary control was good, and the perineal fistula had completely healed. The chief object of our note is to draw attention to the method employed for maintaining an indwelling catheter for a prolonged period while sound healing is taking place. This method allows of a change of catheters without the risk, by no means negligible, of the new catheter being obstructed by folds or pockets in the yet unhealed urethra.

RESIDENTIAL TREATMENT FOR EX-SERVICE MEN.—Since 1930 the Ministry of Pensions has accepted liability for the cost of residential treatment only in cases, whether of tuberculosis or other disablement, where the condition requiring treatment at the time is accepted to be due to war service. Notice has now been sent to local authorities that before incurring expense the Ministry will have to be satisfied from a review of the service and other records in the department's possession that the condition requiring treatment can still be accepted to be due to war service. This review will be undertaken upon receipt of a certificate from the tuberculosis officer saying that arrangements have been made to provide residential treatment in a case appearing on the council's list as having been accepted on a previous occasion. This change of procedure will come into operation on Jan. 1st, 1934.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF THERAPEUTICS AND PSYCHIATRY

AT a joint meeting of these sections held on Dec. 12th the chair was taken by Dr. EDWARD MAPOTHER, president of the section of psychiatry. A discussion on the Uses and Dangers of

Hypnotic Drugs Other than Alkaloids

was opened by Sir WILLIAM WILLCOX. The important thing, he said, was to know the cause of the insomnia; the cause should be treated, and hypnotics used only when general measures failed or were inapplicable. Drugs of low toxicity included the inorganic bromides (e.g., sodium, potassium, ammonium, strontium, and calcium bromides), alcohol, phenazone and its derivatives, aspirin and salicylicaine derivatives. Combinations of these with opium preparations or codeine were often effectual. The great change since 1913 had been the production of large numbers of barbituric derivatives and the introduction of basal anæsthetics, many of which were being used as hypnotics. Other hypnotic drugs of varying degree of toxicity were the alcohol-chloral group—chloral, chloralamide, chloralose, butyl chloral, chloretone, hypnal, dormiol, isopral, ural, bromal, amylene hydrate, paraldehyde, aponal, neuronal, hedonal, avertin. The urea group included urethane, aponal, aleudrin, adalin, bromural, somnosal; and the sulphone group sulphonal, trional, tetronal. Chloral and chloralamide were good hypnotics which had dropped out of use. Avertin (tri-brom-ethyl alcohol) was as toxic as chloroform. Care and experience were required to decide on suitable doses. The members of the urea group were safe and not very toxic. The sulphone group was not much used; the drugs were slowly absorbed and there was a danger of cumulative effect.

The barbituric acid group offered a most formidable list of preparations. When a higher allyl group than ethyl was introduced the drug became much more toxic. Compounds of these drugs with analgesics were dangerous because of the risk of overdose of hypnotic while a large enough dose of analgesic was being given. Barbiturics were rapid and certain. They acted much more quickly on an empty stomach or if taken with alcohol. Idiosyncrasy might be natural or acquired; any indication of allergy, hyperthyroidism, or latent liver or renal dysfunction was a danger signal. Full doses of a basal anæsthetic were very dangerous in the presence of any of these danger signs, but a smaller dose would produce an adequate effect. Any prolonged toxic condition rendered these drugs much more active. They might produce any nerve paralysis, and in large doses coma and pneumonia. There was not much risk of cumulation, and very little tolerance was acquired. Habit formation undoubtedly occurred. If they were taken regularly every night it was common for an overdose to be taken sooner or later. Many cyclical cases had an obsession of insomnia and no drug would make them sleep. He had been so impressed by the dangers of the barbituric and sulphonal groups that he never prescribed them and thought their prescription ought to be safeguarded by regulations. No total prescription amounting to a fatal dose should ever be given to a patient. If the public were to be protected there must be a close coöperation between medicine and pharmacy.

THE CAUSE OF SLEEP

Dr. F. L. GOLLA said that no one hypnotic was universally applicable. Knowledge of the mechanism of sleep was still very scanty. The nervous system acted as a whole. Pathological and experimental lesions in the infundibular region produced pathological sleep. A diencephalic sleep centre had been described but the term "waking centre" would be more appropriate. All that we knew of sleep suggested an abeyance of the katabolic activity associated with the sympathetic system and an excess of the anabolic activity associated with the parasympathetic system. Salicylates seemed to have the special property of diminishing painful stimuli and thus acting secondarily as hypnotics. The diencephalic centre was stimulated by sensory impulses from many directions. Insomnia might be due to excessive cortical activity, and for this there was no need to use drugs strong enough to depress the diencephalon. An analysis of the introspections of trained subjects under various hypnotics would be of the greatest value. The failures and dangers of hypnotic drugs would be greatly diminished by increased knowledge.

Prof. J. A. GUNN said that sleep might be regarded as a rhythmic depression of the activity of the brain and insomnia as due to one or a combination of two causes: abnormal afferent stimuli affecting the brain at a time when its depression was due; or increased excitability of the brain cells. The rational treatment of the first type was to remove the stimuli if possible. Increased excitability might be congenital or acquired; there were brains which were easily kept awake from childhood. Excitability could be increased artificially, as by caffeine, ephedrine, and high blood pressure. Bromides were especially valuable for normal brains kept awake by such stimuli as worry. Analgesics might produce sleep by reducing afferent stimuli and could usefully be combined with hypnotics, but a fixed inflexible combination was, he agreed, dangerous. A small analgesic dose of morphine combined with chloral might be more effective than a large dose of either alone. Combinations of hypnotics acting at different points were also useful. More knowledge was needed of the site of the insomnia and the site of action of the drug. Drugs grouped as pharmacologically identical showed fine differences of physiological action. Dosage in relation to body-weight ought to be more carefully regulated. It would be worth while for someone to analyse the published cases of hypnotic poisoning and search for differences in the site of action. Different tissues produced different degrees of tolerance to the same drug; the liver and kidney might differ from the brain. The increase of cases of hypnotic poisoning deserved attention. These drugs, and prescriptions for them, were too easy to get. There was no pharmacology without toxicology; no drug was "therapeutically active and non-toxic."

THE CLINICAL POINT OF VIEW

Dr. P. K. MCCOWAN said that paraldehyde was the safest hypnotic. Chloral hydrate was extremely useful but needed cautious administration in the debilitated and old. Addiction was rare, but of all drugs of addiction it was the most likely to produce serious changes. Sulphonal was useful and safe if its tendency to cumulation was remembered. It should not be used for more than about a week. Trional acted more quickly and was rather less cumulative. The action of all the barbiturates was very similar. Their chief danger was that the optimum

hypnotic dose was about 50 per cent. of the minimum lethal dose. Nembutal could be used as a sedative or hypnotic; used intelligently it was fairly safe. It was well to familiarise oneself with one group of drugs, as experience in its use was of more importance than the specific action of any drug.

In conjunction with glucose and insulin, barbiturates were also safe for prolonged narcosis. They inhibited brain oxidation of glucose and lactic acid, thus interfering with the carbohydrate metabolism. A similar effect took place in the liver and heart. The result was a condition of ketosis which could be prevented by glucose and insulin. Somnifaine administered intramuscularly was the most useful drug for this purpose. A certain proportion of patients taking sedatives in the usual way sooner or later showed ketonuria which could be cleared up by glucose and insulin. These might well be given as a routine when a hypnotic was used for anæsthesia. Addiction risk was no greater with the barbiturates than with other drugs, but it must be borne in mind. Sedative and hypnotic drugs should be used as a last and not as a first resort. In mental hospitals, for instance, the amount used could be considerably reduced by occupational and hydrotherapy.

Sir JAMES PURVES-STEWART stressed the occasional unexpected toxic effects of barbituric drugs in ordinary doses and quoted three cases—two due to medinal and one to allonal. The symptoms had all cleared up directly the drug was withdrawn. None of the patients or their medical advisers had volunteered a history of drug-taking. In full doses these drugs seemed to exercise toxic effects on the whole brain, but in smaller doses they might have a selective action on small groups of cells.

A DEFENCE OF THE BARBITURIC GROUP

Dr. R. D. GILLESPIE said that the allegation of danger from barbituric drugs depended on the assumption that they were dangerous in therapeutic doses, or that they caused suicide or that they produced addiction. He had made an investigation of the entire literature, so far as he knew. In the only previous survey of the records which had been published in this country there had been an error of nearly 60 per cent. in the death-rate ascribed to these drugs, owing to counting cases twice, and other errors. Dr. Gillespie had found that the total number of fatal cases recorded up to date was 157, nearly all due to very large doses taken with suicidal intent. He had collected only five fatal cases due to ordinary doses of veronal, and in three of these Sir William Willcox had admitted doubt whether veronal had played any part or not. There were also two pernocton deaths, but their deaths differed from those of barbituric cases generally and both had died suddenly after major operations. No case of nembutal poisoning had been recorded except for Sir William Willcox's statement this year that deaths had occurred. There was no case on record where repeated administration of normal doses had been fatal, and no case which would justify the statement that these drugs were dangerous. Idiosyncrasies, of course, existed, but usually declared themselves in good time by toxic signs. The contra-indications were definite. The barbituric group came eighth on the list of drugs used for suicide and accounted for 0·26 per cent. of suicides in 1931; it was surprising that they had played so small a part considering the advertisement they got. To take a drug in therapeutic doses every night for four months to relieve insomnia was not addiction, and some of the ascription of addiction to barbiturates was a result of this looseness of terminology.

Dr. G. B. JAMES said the first stage of the practitioner's attitude towards prescribing these drugs was a brief one of intense apprehension. The second stage might last too long: the early fears gave place to a somewhat indiscriminate use of hypnotics. This was a dangerous stage. His doses tended to increase and he did not always know much about the substance he was using. The third phase was one of greater caution, often introduced by some accident or case of idiosyncrasy. He thereafter adhered to a short list of well-tried hypnotics with which he was thoroughly familiar. Vigilance was essential, and smaller doses than those commonly given could usefully be adopted in many cases. The bromides should only be given in large doses to specially selected cases. There was so much of the personal in the prescription of hypnotics that regulations would be difficult to establish.

Dr. A. MEYER said that many so-called primary cell degenerations were due to accidental or post-mortem or technical causes; with greater experience observers gained greater caution. He showed sections of the central nervous system from experimental animals which had died from ether narcosis and cyanide of potassium. They displayed softening in various parts of the cortex, substantia migra and globus pallidus. Carbon monoxide showed the same effect. The same results could follow other kinds of asphyxia. It was the anoxæmia—including the condition rendering oxygen unavailable for oxygenating processes—which acted as the pathogenic factor and determined the effects. It was uncertain whether similar effects were to be ascribed to hypnotics.

Dr. DESMOND CURRAN described an investigation into the value of nembutal for patients at the Maudsley Hospital. During fourteen months 328 patients had received it. Their psychiatric conditions had varied widely, and they had formed a representative series except for the exclusion of irrecoverable cases. No more than grs. 13½ was given in 24 hours or grs. 6 as a single dose. It had proved of great value as a hypnotic and for minor operations in apprehensive or resistive subjects. It must be given in concentrated solution on an empty stomach. The action usually appeared in half an hour and was profound for another half an hour, after which the patients became drowsy and readily awakened by stimuli. It was roughly as effective in doses of grs. 4½ but not so certain as paraldehyde in doses of 2 drachms. It was useful for patients who could not get off to sleep and who worried about this. No true tolerance had been seen, but there was individual variation. Only two patients had shown alarming symptoms, and these had been physically debilitated. A few had complained of nausea, but after-effects were strikingly absent. Quite large doses of other drugs had been given in combination. Nembutal in doses of grs. 3 to 6 was an excellent hypnotic and free from unpleasant after-effects.

Sir MAURICE CRAIG said his experience had been widely different from that of Sir William Willcox, which was accounted for by Sir William's admission that he never prescribed the barbiturates. One of the most absurd and unscientific things about this controversy was the habit of deducing generalisations from a few cases. What did two or three cases of ill-effects compare with the thousands and thousands of people who took barbiturates? It was astounding to hear that totally untrue statement repeated—that persons who regularly took hypnotics commonly ended in suicide. If that were true, the papers would

contain nothing else. In Sir Maurice's 40 years' experience he had known people holding high positions who were quite unable to do their work without their hypnotic, and he had never seen a barbiturate-taker become an addict. An addict was never an addict to these drugs alone. He would be very sorry indeed to see any restrictions governing the barbituric group. Small doses were infinitely more valuable than large.

Sir WILLIAM WILLCOX replied, saying he saw many very sad cases and thought Sir Maurice Craig and Dr. Gillespie regarded the dangers too lightly. The barbituric group of drugs wanted using with great care. He had met with many cases of addiction.

SECTION OF TROPICAL DISEASES AND PARASITOLOGY

AT a meeting of this section held on Dec. 7th, Dr. H. S. STANNUS, the president, being in the chair, a discussion on

Avitaminosis (B Group) in Tropical and Temperate Countries

was opened by Miss HARRIETTE CHICK, D.Sc., who sought to correlate laboratory work on the various members of the vitamin-B complex, with clinical experience. Only vitamins B_1 and B_2 (B and G of the American workers) were sufficiently circumscribed and well-defined to be worthy of discussion in this connexion. These two vitamins had wide resemblances in distribution and also striking differences; egg white, for instance, was rich in B_2 and not in B_1, while wheat germ was rich in B_1 and poor in B_2. It was important to ascertain how far the B_1 and B_2 deficiencies of laboratory animals were the true analogues of beri-beri and pellagra respectively in man. A theory of vitamin-B_1 deficiency sufficiently explained the occurrence of beri-beri among rice-eating communities in the Philippine Islands and in Java, but not, on the testimony of a number of observers, in India. Beri-beri only occurred among populations whose staple cereal food is white wheat flour, when the rest of the food is very poor and ill-balanced, as in Newfoundland, Labrador, and Iceland. Here, too, the observed facts agreed well with a theory of vitamin-B_1 deficiency. Dr. Chick said that pellagra occurs when the diet consists largely of maize, though it is sometimes seen on other diets. The laboratory examination of various cereals for their B_2 value, by means of growth tests on rats, showed that rice is actually poorer in this factor than is maize; but human rice eaters seldom developed pellagra. It seemed probable therefore that pellagra is not a straightforward deficiency of vitamin B_2, though it is commonly held to be so in the United States as the result of the work of Goldberger and his colleagues. They produced a dermatitis in rats and a condition called "black tongue" in dogs, by means of a pellagrous diet, and found that the individual foodstuffs which cured these conditions also cured human pellagra in relatively the same proportions. Certain other diseases had also recently been referred to a deficiency of vitamin B_2 because they had been cured with liver or yeast; but in such clinical trials it should be recognised that both yeast and liver contain far more than B-vitamins. Pink disease, otherwise known as Swift's disease or acrodynia, had been cured by this means in various parts of the world; it was of interest that in one case at least its occurrence was associated with consumption of a maize diet. Other diseases reported to be cured by yeast or liver were some forms of anæmia, sprue, and epidemic dropsy.

Dr. Chick pointed out that a vitamin deficiency might be due to an actual deficiency or to an inability to absorb what was available; the significance of diarrhœa and alcoholism in this connexion should not be lost sight of, as, for instance, in pellagra and alcoholic neuritis. The occurrence of alcoholic pellagra was described only where maize spirit was consumed.

Prof. R. A. PETERS spoke about the therapeutic use of vitamin B_1, about which definite knowledge was only just being obtained, though the relationship of beri-beri to food deficiency had been recognised for 40 years. The first concentrates were prepared by Jansen and Donath in Java, but within the last year really concentrated preparations had been made, and the time was now ripe for working out how they might best be used therapeutically, and whether there was any application for them in temperate climates. In the United States it was held that children are often deficient in this vitamin. A concentrate of vitamin B_1 might profitably be tried in cases of œdema; these were rare and it was difficult to find controls, but suitable cases could probably be found in this country if looked for. Highly purified preparations of vitamin B_1 had now been made in five or six laboratories, chiefly from rice polishings; in two laboratories, of which the biochemical laboratory at Oxford was one, yeast was the parent material. A crystalline hydrochloride had been obtained of a substance which contains sulphur, and which is active for pigeons in a dose of 2 γ.

The earliest symptom of vitamin-B_1 deficiency observed in pigeons was anorexia; the symptoms which followed were chiefly associated with the central nervous system. The fact that they could be cured in half an hour by intracranial injection of the vitamin made it unlikely that histological change had taken place. Peripheral lesions were rarer, and the œdematous chronic condition, described by McCarrison, was rarely seen, though œdema could be promoted by administration of salt. Prof. Peters said that a dose of the vitamin 30 to 40 times the minimum dose was not harmful to pigeons, and deduced that the risk of hypervitaminosis, if it exists, is comparatively remote.

Vitamin B_1 had in the past been related to carbohydrate metabolism and to oxidation. Definite proof had now been obtained that there was an oxidative lesion of the lower part of the pigeon's brain, which could be demonstrated, particularly with a lactic acid substrate, and cured with the vitamin, in vitro. The severity of symptoms in the bird ran parallel with the degree of depression of oxidation found in the brain, and there was increased lactic acid in the blood. A Japanese worker had found increased lactic acid in the blood of human beri-beri patients. Prof. Peters said that clinicians should make a proper trial of vitamin B_1 in the form of concentrates, in anorexia, œdema, palpitations, and breathlessness, and in neuritic and convulsive conditions; if the therapy is going to succeed there should be improvement in two to four days, when 2 mg. of nearly pure vitamin had been given. Such concentrates could easily be prepared commercially.

Dr. LUCY WILLS pointed out that there was no regular and specific association of anæmia with any known vitamin deficiency in man or animals. For the cure of pernicious anæmia, highly potent liver fractions could be obtained, which were devoid of vitamin B_2.

Cases of tropical macrocytic anæmia, with normal gastric juice but with the blood picture of pernicious anæmia, were cured with marmite, which Strauss and Castle found to contain the extrinsic but not the intrinsic factor for true pernicious anæmia. Trial of various fractions of the vitamin-B complex in tropical macrocytic anæmia excluded vitamins B_1, B_2, and B_4, and, finally, it was found that though the yeast derivative, marmite, was active, whole untreated yeast was inactive. The vitamin-B complex had thus still to prove its claim to any significance in connexion with anæmia.

Prof. S. J. COWELL marshalled the very contradictory evidence, connecting any part of the vitamin-B complex with gastro-intestinal disturbance, in the sense of either hurry or delay, and concluded that there was no evidence of any specific relationship. Cure of an acute gastro-enteritis of children, with very toxic symptoms, had been recently described from Jerusalem, by means of injection of a vitamin-B_1 concentrate; the very severe anuria was at once relieved. The fact that intestinal stasis in man often yielded to treatment with wheat embryo was no proof that the factor responsible for the cure was any part of the vitamin-B complex.

Dr. S. LEVY SIMPSON enumerated the primary disorders which might give rise secondarily to pellagra. All of these were of the nature of gross gastro-intestinal disturbance. The various ways in which these lesions might promote pellagra were suggested: by necessitating a diet poor in vitamin B_2; by the exclusion of the gastric digestion; by change in the intestinal bacterial flora; by deficient absorption; or by destruction of the vitamin by alkalis. Dr. Levy Simpson described a case of an Englishwoman in whom pellagra with typical skin eruption developed, following a partial gastrectomy for duodenal ulcer; treatment with a vitamin-B_2 concentrate from egg white was rapidly followed by a clearing of the skin condition.

Dr. C. C. UNGLEY spoke very briefly of the use of some yeast fractions in pernicious anæmia.

Dr. MARGARET BALFOUR mentioned the frequent occurrence of premature births among sections of the community in India, whose diets on investigation appeared to be low in vitamin B_1.

Dr. W. CRAMER disagreed with Prof. Cowell, holding that there was evidence for specific action of the B-vitamins on the gastro-intestinal tract.

Dr. G. W. BRAY described the occurrence of infantile beri-beri in a Pacific island and its prevention with the yeast from palm toddy.

Prof. PETERS mentioned that the appearance of rats suffering from deficiency of vitamin B_4 suggested pink disease, but that Dr. J. C. Spence had said that pink disease was not cured by marmite.

Dr. C. L. COPE described the successful treatment of œdema in a case of nephrosis with a vitamin-B_1 concentrate.

The PRESIDENT, in closing the discussion, remarked that he could never understand how a deficiency could be supposed to produce a series of positive symptoms, as in pellagra, these symptoms being much more suggestive of an intoxication.

KING GEORGE HOSPITAL, ILFORD.—The housing committee of the London County Council has recommended that a contribution of £5000 should be made towards the cost of extending this hospital. The council contributed £10,000 for the same purpose in 1928, and an undertaking has been given that the council's grant will be used specifically for providing additional bed accommodation.

SOCIETY OF MEDICAL OFFICERS OF HEALTH

AT a meeting of the fever group of this society on Dec. 1st, Dr. H. STANLEY BANKS delivered his presidential address on the

Use and Misuse of Antitoxin

Text-book teaching about dosage and route of administration of diphtheria antitoxin should, he said, be revised in the light of (1) increasing experience of intravenous injection; and (2) production of a highly concentrated serum largely free from extraneous protein. Since 1895 there had been a gradual tendency to the use of larger doses, often without proper discrimination between the needs of the mild non-toxic case and the hypertoxic or malignant case. In the former, it was sufficient to combat toxin which might be absorbed from the lesion after treatment was instituted. A dose of 2000 to 8000 units intramuscularly was sufficient in experienced hands for such cases. The hypertoxic or malignant case with extensive or rapidly spreading membrane and periglandular infiltration of the neck was quite different. In such cases an attempt should be made to neutralise not only circulating toxin, but also the toxin which had already become loosely bound to tissue cells. There was ample evidence, experimental and clinical, that this was possible provided that combination with tissue cells was not too far advanced. A large excess of antitoxin everywhere available throughout the tissues was, however, necessary for this effect to be achieved. The dose recommended for this purpose was a single intravenous injection of 50,000 to 150,000 units. Repeated injections were unnecessary. Nothing was achieved by giving any part of the dose intramuscularly, unless for any reason the intravenous route failed. The technique in young children was not easy, but could be much simplified by the use of a suitable needle and syringes with peripheral nozzles. Antitoxin was, he thought, often wasted in fever hospitals on cases erroneously certified as diphtheria. Although these formed as much as 25 per cent. of diphtheria admissions, it was right and proper that cases under suspicion of diphtheria should be sent into hospital. Provided they were maintained under expert supervision in hospital, antitoxin could safely be withheld and the Schick test performed. This did not apply to the district case when the medical practitioner should always give antitoxin or send the case into hospital if diphtheria was suspected. Passive immunisation of contacts should not be undertaken lightly, without Schick, swab, and virulence tests.

Scarlet fever could be advantageously treated by intravenous injection of scarlatinal antitoxin. In two different fever hospitals, by this means, the scarlet fever work had been improved beyond all recognition. A preliminary intradermal test with horse serum should be done and all cases with a history of asthma, eczema, or previous serum injections should be excluded. Not only toxic symptoms were neutralised but septic complications were almost totally prevented. Even in late septic cases, so long as faucial œdema was present, quite dramatic results could be obtained.

In cerebro-spinal fever, antimeningococcal serum should be given intravenously in large dosage (up to 100 c.cm.) as well as intrathecally. A highly specific antimeningococcal serum had not been produced since the war; large doses were therefore necessary. Good results reported from Rumania appeared to be associated with special methods used in the

production of the serum, as well as with intensive therapy by all routes. Meningococcus toxin had recently been produced in U.S.A., and a meningococcus antitoxin prepared by means of it was at present on trial in this country.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY

AT a meeting of this society, held on Dec. 7th, Dr. WALTER BROADBENT read a paper on

Valvular Disease of the Heart

He discussed the treatment of rheumatic fever, and, in very acute cases in children, recommended anti-streptococcic serum by the mouth on an empty stomach. Careful treatment with prolonged rest in bed had greatly lessened the cases of valvular disease in adults. Aortic regurgitation was the first of the valvular diseases to be differentiated, Dr. Corrigan of Dublin in 1832 giving an excellent description of it. Rheumatic fever was the main cause of aortic valve disease; syphilis came next. The most striking physical signs of aortic regurgitation were the marked pulsation of the carotids and the hypertrophy of the heart. The amount of regurgitation could be estimated by the largeness of the artery and the collapsing character of the pulse. The systolic pressure was high, and the diastolic extremely low. There was nearly always a systolic as well as a diastolic murmur, but this did not imply stenosis. In 74 post-mortems of cases of aortic regurgitation Thayer only found 3 with any stenosis. In quite a large number a presystolic murmur could be heard at the apex and a thrill felt. This was first noted by Austin Flint in 1862, and the murmur is called after him. There was no mitral stenosis found post mortem in these cases. Aortic stenosis was rather rare; it was associated with a small pulse and a hypertrophied heart. Cerebral embolism was more liable to occur following aortic stenosis than follows any other valve lesion.

Mitral regurgitation was nearly always due to rheumatism. In children every systolic murmur was important, since any endocarditis of the mitral valve might develop into stenosis. In adults many such murmurs were negligible. In the presence of a good first sound a systolic murmur did not indicate any material regurgitation. As the first sound was encroached upon by the murmur, so the regurgitation was greater, and when the murmur replaced the first sound, it was considerable. Possibly by that time the heart would be irregular from fibrillation, but that mattered much less in this than in aortic disease or mitral stenosis.

Of all valvular diseases mitral regurgitation was the most amenable to treatment; this lesion had made the reputation of digitalis. Mitral stenosis had been divided into three stages by Sir William Broadbent: (1) a presystolic murmur, a short first sound, and a second at the apex; (2) absence of a second sound at the apex and lengthening of the presystolic murmur to fill up the whole diastole, the murmur being divisible into two, like a diastolic and presystolic; (3) disappearance of the presystolic murmur, leaving only a short loud first sound, rapid and irregular from fibrillation. If improvement took place the presystolic murmur returned. In treatment digitalis was less useful than in regurgitation and the dosage should be less. Vasodilators and general tonics were of help. Mitral stenosis with regurgitation was less serious than mitral stenosis, since the heart could hypertrophy more, not being hampered by the small size of the left ventricle as in pure stenosis. Ulcerative or bacterial endocarditis attacked the aortic valve more than any other, but might arise on the wall of an auricle and produce no murmur. In most cases there was antecedent valvular disease. In a case of gonococcal endocarditis of the pulmonary valve the murmur was a loud harsh one, systolic and diastolic to the left of the sternum, simulating that heard in patent ductus arteriosus. So far there seemed to be no successful treatment for this lesion.

REVIEWS AND NOTICES OF BOOKS

Nasal Accessory Sinuses Roentgenologically Considered

By FREDERICK M. LAW, M.D., Roentgenologist, Manhattan Eye, Ear, and Throat Hospital, New York. Annals of Roentgenology, Vol. XV. New York: Paul B. Hoeber. 1933. Pp. 215. $10.00.

THIS book has been compiled for two classes of reader, the roentgenologists and the rhinologists. To the former the author has tried to show the kind of information which will be of value to the surgeon, and to the latter he explains the practical side of the technique and the difficulties of interpretation which may arise. The following positions are employed: the so-called nose-forehead, the nose-chin, the vertex-mental, and the lateral positions, and, more rarely, the two oblique positions. If in the two first-named positions, respectively the nose and forehead, or the nose and chin, are in contact with the film, it is clear that the positions must vary with the shape of the face; but Dr. Law gets rid of this difficulty by the use of measured angles, 23° and 45° respectively, between the axis of the rays and a base-line taken from the external auditory meatus to the outer canthus. The skiagrams are taken with the head in the horizontal position. The disadvantage of this position is that a "fluid-level" in the sinuses cannot be shown; hence many radiologists prefer the upright posture. Dr. Law agrees with the majority of workers that it is not often helpful to fill the sinuses with a radiopaque substance, for abnormalities such as thickened mucosa and polypi can be well demonstrated without it, but he quotes in full Proetz's displacement method for filling the sphenoidal and posterior ethmoidal cells. In the interpretation of the films considerable stress is laid on the appearance of lateral views, especially for the diagnosis of ethmoidal disease. The skiagrams reproduced number 197, and afford ample opportunity of observing and comparing a great variety of normal and pathological conditions. It is unfortunate, but inevitable, that much of the finer detail is lost in reproduction, and this loss is increased by the fact that the pictures have been reduced to about one-half of the natural size. They form a valuable collection none the less, the series of 34 pictures demonstrating development from birth to adolescence being of especial interest. Three key-plates are provided, showing the main anatomical features in the postero-anterior, lateral, and vertex-mental views. Of the former, it is not stated whether the subject assumed a nose-forehead or a nose-chin position, and the angle of the pictures is nowhere stated. A pointer to the feature of interest would

have added to the value of many of the plates. The work represents a great amount of labour, and deserves success.

Operative Surgery—Abdomen and Rectum

By MARTIN KIRSCHNER, Professor of Surgery, University of Tübingen. Translated by I. S. RAVDIN, B.S., M.D., Professor of Research Surgery, University of Pennsylvania; Surgeon, University Hospital, Philadelphia. London: J. B. Lippincott Company. 1933. Pp. 569. 50*s*.

THIS beautifully printed and illustrated volume is a companion to the author's work on general surgery. It describes the operative procedures in use by Prof. Kirschner at Tübingen University, and has been well translated by Prof. Ravdin. General principles and technique are dealt with in the early sections, after which comes systematic consideration of operations on the different regions of the alimentary canal, liver, spleen, and pancreas. Every step is carefully explained and nearly every step is illustrated. Most of the pictures are coloured. The book is of great interest to English surgeons inasmuch as methods with which they may not be thoroughly acquainted are set out in detail. As an example may be mentioned resection of the rectum with preservation of the anus and restoration of continuity. The author advocates and practises this operation wherever feasible, and seems justified in his choice. All through we see familiar problems exceedingly well presented from a new angle. Most active surgeons will wish to possess this book if they take an opportunity of examining it with the care it deserves.

Text-book of Pathology

Third edition. By ROBERT MUIR, M.D., F.R.S., Professor of Pathology, University of Glasgow; Pathologist to the Western Infirmary, Glasgow. London: Edward Arnold and Co. 1933. Pp. 957. 35*s*.

Prof. Muir's text-book has now been in extensive use in medical schools for about nine years, and there is no better known work of its kind in this country. Its outstanding merit has repeatedly been proved to teachers of pathology. For its size it contains an astonishing amount of information, so that notwithstanding its original design as a student's text-book, it has often proved a very efficient work of reference to the pathologist. The book has had considerable influence on the teaching of pathology in this country during the last few years, and in this regard one of its special merits has been the critical and conservative selection of scientific material for inclusion.

Although the general form of the work has not been altered, a very thorough revision has been carried out in the preparation of its third edition. Much new matter has been evenly distributed over the volume, increasing its size by more than 80 pages. Few sections have been left untouched. Amongst the notable additions are an extension of the section on renal œdema to cover the theory of protein loss in relation to this condition, and new sections on asbestosis, the relation of tumours to radiation, the metabolism of tumours, and liver efficiency tests. A more detailed account of the histology of the neuroglia has been introduced, embodying the teaching of the Spanish school of histologists. Several parts of the work have been rearranged, including the sections dealing with rheumatic lesions of the heart and those on tumours of the brain. In the latter the Bailey and Cushing classification of gliomas has been adopted. The classification of nephritis has also been revised and several new illustrations have been added.

The Care and Feeding of Adults

With Doubts about Children. By LOGAN CLENDENING. London: John Bale, Sons and Danielsson, Ltd. 1933. Pp. 360. 6*s*.

Dr. Clendening is an American physician whose book is written as much for the general public as for fellow practitioners. It is amusing and full of that enlightened common sense which accrues slowly to those who constantly deal with human beings, sick and well. The author endeavours to arrest the modern tendency, even commoner on his side of the Atlantic than on ours, to seek for régimes of regulated diet, exercise, and sleep, often far removed from the normal, which shall ensure a healthy, happy, and prolonged life for their devotees. He shows, with a wealth of proof from authoritative sources, how slender is the basis of many widely held beliefs, such as the danger to health of tobacco, meat, alcohol, salt, and no exercise. He also emphasises the ease with which even those trained to a scientific outlook may, if engaged in clinical work, confuse cause and effect, and the fact that many tiresome if not actually deficient diets, for the value of which there is no real evidence, are medically imposed on patients with high blood pressure, rheumatic pains, mild obesity, and many other conditions. Dr. Clendening points out that it is not only outside the profession that mental association may take the place of reasoning. We agree with him that the practice of periodical "health audits" for the apparently healthy is not without its own danger of focusing the victim's attention on slight deviations from the normal, and so precipitating a breakdown.

The book is to be recommended for two reasons: it clears away the tangle of diets and régimes which are not based on proven facts; and it emphasises the dietetic aspect of treatment where it is all important, as in diabetes, renal defect, and gastro-intestinal lesions.

The 1933 Year Book of Radiology

Diagnosis. Edited by CHARLES A. WATERS, M.D., Associate in Roentgenology, Johns Hopkins University; Assistant Visiting Roentgenologist, Johns Hopkins Hospital. *Therapeutics.* Edited by IRA I. KAPLAN, B.Sc., M.D., Director, Division of Cancer, Department of Hospitals, New York; Visiting Radiation Therapist, Bellevue Hospital. Chicago: The Year Book Publishers, Inc. 1933. Pp. 804.

THIS is the second issue of an ambitious year book. Many important advances in radiology, as in other specialties, receive their first publication in the proceedings of societies which are only accessible to the man of many tongues and considerable leisure. Other readers will be grateful for the opportunity here given to survey the vast field of current radiological literature with little effort. The material has been sifted and judiciously selected; the book is no mere compilation of colourless abstracts, for, here, the abstracts, however brief, have been compiled in the spirit of the original articles which they summarise. The result is not only a complete work of reference to developments in every quarter of the globe but a readable text-book. The authors' comments, when they make any, are sound. In particular we would note, in the introduction to Part II., the section on radiotherapeutics, where Dr. Kaplan gives a judicious survey of radiotherapy as applied to cancer.

THE LANCET

LONDON: SATURDAY, DECEMBER 23, 1933

CYSTICERCOSIS SIMULATING EPILEPSY

CYSTICERCOSIS in man is caused by the ingestion of eggs of *Tænia solium*, and the consequent invasion of the body by the embryos. There are two tapeworms of which man is the sole host in the adult stage of the parasite, *Tænia saginata* and *T. solium*. The former normally passes its cysticercus, or bladder-worm, stage in the ox, and is not known to give rise to human cysticercosis. On the other hand, the embryos of *T. solium*, normally developing in the pig, readily invade the human body, and attain larval maturity there. These cysticerci may be found anywhere—in the subcutaneous tissues, muscles, and organs—but they have a predilection for the brain, where they select in particular the grey matter. It is clear that the cysticerci which parasitise man have entered a blind developmental alley, and, in the absence of cannibalism, are lost to their race; but their unfortunate hosts will derive little comfort from this consideration. In a communication to the Royal Society of Tropical Medicine and Hygiene on Dec. 14th, which Sir LEONARD ROGERS, from the chair, described as likely to make medical history, Colonel W. P. MACARTHUR reviewed some startling sequelæ of cysticercus invasion in man. He gave convincing proof that many military patients who develop symptoms that were formerly attributed to idiopathic epilepsy are really victims of cysticercosis. As the outcome of an investigation into the occurrence of epilepsy in the Service, over 60 military cases of proved cysticercosis have been collected. It is significant that 20 of these were diagnosed in Millbank Hospital in the present year, and that eight soldiers who returned from India during the past trooping season with a history of fits—in six of them certified as due to "true epilepsy"—have already been proved to suffer from cysticercosis. The epileptic seizures caused by this parasitic invasion of the brain have no symptom which distinguishes them from the recognised varieties of epilepsy.

An extraordinary feature of cysticercosis is that the parasites commonly are present in the body for a period of years before brain symptoms become evident. Colonel MACARTHUR's explanation of this surprising latency is that the living cysticerci, in the numbers ordinarily found in the brain, are more or less tolerated by the host; but that after their death they act as foreign irritants. The duration of life of individual cysticerci in the same host may differ by years, and the successive deaths of parasites in various parts of the brain would account for the striking alterations in the character and extent of the brain symptoms which a patient may exhibit at different times. In support of this theory Colonel MACARTHUR demonstrated in preparations from fatal cases of cysticercosis active destructive changes taking place around dead and degenerating cysticerci in the brain. He quoted also the results of a study of the conditions underlying the appearance of "new" palpable cysts in the muscles of persons whose infestation had lasted for as long as seven years before these "new" cysts showed themselves. When such cysts were excised as soon as they had become manifest, they were found to be formations of long standing. In each the contained larva was dead and degenerating, and the cyst capsule tense with fluid; to the consequent expansion of the cysts is attributed the fact that they become palpable at a late stage. In addition to epileptic attacks, cerebral cysticercosis may give rise to a wide variety of mental and nervous symptoms, and the considered diagnoses of patients in this series who eventually were proved to suffer from cysticercosis included acute mania, melancholia, delusional insanity, and dementia præcox, as well as cerebral tumour and disseminated sclerosis. The cysticerci found in the brain of some of these patients numbered as many as 200. Although infestation may be contracted in England, as is shown by the case of one soldier who has never left this country, generally it originates abroad. India, Egypt, and Malaya were definitely implicated in the series of cases cited, and probably other countries as well, but because of changes of station during the long presymptomatic period it is sometimes impossible to say where the disease was contracted. In the great majority of cases there is no present evidence nor any history of intestinal tæniasis.

A most important aspect of the problem is the possible extent of cysticercosis in England, for there is no reason to suppose that the disease is in any way peculiar to troops. In existing conditions, indigenous cysticercosis is unlikely to occur in this country, except as a chance infestation, like the example mentioned above. There are many people in Great Britain, however, who have been exposed to some risk of contamination abroad—discharged soldiers and sailors of the regular forces, the tens of thousands who served during the late war, and civilians who have resided overseas. If a diligent search in mental hospitals, institutions for epilepsy, and general hospitals were carried out by persons who have studied cysticercosis, especially in its more elusive forms, it is probable that many unsuspected cases of the disease would be brought to light.

No medicinal treatment has been found effective in cysticercosis. Indeed, Colonel MACARTHUR's observations on the changes and increase in size of the cyst following the death of the parasite, suggest that to kill off large numbers of parasites at the same time—if a chemical of lethal effect is discovered—might well make matters worse. As regards surgery, the large number and wide distribution of parasites found in the brain post mortem does not encourage a general resort to operative treatment. In actual practice, a temporary amelioration of symptoms after operation has been followed by death in *status epilepticus*.

At any rate, it is impossible to appraise the final result of operative treatment until time has been given for any other parasites in the brain to die off, and this may mean years of observation. None the less, there are definite and practical advantages in establishing a diagnosis of cysticercosis. In the Army this disease if contracted abroad is rightly regarded as attributable to military service, and therefore a responsibility of the State. To any patient and his family the discovery of an organic cause for a supposed idiopathic epilepsy is gratifying. And further, when mental deterioration in cysticercosis has progressed so far that the subject becomes certifiable as insane, it is an indescribable relief to all his family and connexion—even though the unfortunate victim himself may gain no benefit—to know that any possible slur of familial lunacy has been removed.

THE NURSERY SCHOOL QUESTION

THE publication of the volume[1] on infant and nursery schools completes the trilogy known as the Hadow report; from the medical standpoint it is perhaps the most interesting of the three, for it covers a period, that up to 7 years of age, which is critical both in physical and mental development. In the appendices will be found an account of anatomical and physiological development of children between 2 and 7 years by Prof. H. A. HARRIS, and of emotional development by Prof. CYRIL BURT and Mrs. SUSAN ISAACS, which should be of real value to medical practitioners. As the report wisely points out, the problem of the physical and mental welfare of children under 5 is one in the solution of which the nursery school constitutes only one factor. Fundamentally it depends for its complete solution on better housing conditions; child welfare centres have a part to play, and there is also required efficient educational work in housecraft and infant care. Whilst something is being done in all these directions the ground is still inadequately covered. Housing conditions for many are far from satisfactory; hygiene teaching is only in its infancy; and whilst child welfare work is coping efficiently with the problem of the child up to 1 or even 2 years of age, there is no adequate supervision of the child from 2 up to the age when he enters school. Only 13 per cent. of children between 3 and 5 years of age are in attendance at school, and the hiatus at this point is large. The school medical service still finds too many entrant children suffering from defects which might have been ameliorated in whole or in part in earlier years.

The Hadow Committee have refrained from expressing any definite opinion how this gap should be filled, but the tone of the report gives the impression that a possible solution of the difficulty lies in the opening of more nursery schools and classes. They suggest that the nursery school should primarily meet the needs of children who live in districts where housing and general economic conditions are below par. This conclusion should meet with little opposition, and the further suggestion that has been mooted in some quarters that the arrangements for slum clearance might include the provision of sites for nursery schools is only the practical application of the committee's recommendation. They also advocate the establishment of such schools in districts where conditions are more favourable, as centres in which problems connected with the general development and nurture of children may be investigated. In such districts the urgency of the need on physical grounds is, of course, not so great, but in view of the better modern understanding of the factors that affect mental and moral development in the earlier years there is surely a case for the extension of nursery schools even to what may be regarded as less necessitous areas. The prevention of maladjustment is as important as the prevention of physical disease or defect, and the need for this is not confined to slum areas.

Practical experience in areas where nursery schools and classes are already in being shows that they have a value beyond their immediate purpose. Their establishment has been found to create on the part of parents a greater interest in the development of their children, a greater desire for knowledge in matters relating to child care, and a greater interest in school activities generally; teachers can do much to foster these by establishing regular meetings for mothers at which members of child welfare and school medical staffs share in the teaching. There are great possibilities in the future for nursery schools, not so much as schools in the strict sense but as educative centres for parents and children, linking together the child welfare and the school medical service.

THE DUODENAL TUBE IN INTESTINAL OBSTRUCTION

ONE of the most formidable complications of acute intestinal obstruction is the accumulation of enormous quantities of fluid in the stomach and small intestine. After an operation for the relief of obstruction the surgeon often feels that the recovery of normal peristalsis is prevented by continuous overdistension of the muscle wall of the gut, while gastric dilatation and persistent vomiting distress and exhaust the patient. Unless some means of keeping the stomach empty is adopted, the patient almost certainly dies. C. H. MAYO is quoted as having said that he would rather see a stomach-tube than a stethoscope hanging round the neck of his surgical intern. But however enthusiastic one may be about the effects of repeated gastric lavage, it cannot be described as ideal from the point of view either of the patient or of the house surgeon and its effect on *intestinal* dilatation is very slight. Many surgeons now advocate the passage of a duodenal tube, which can be left in situ for days at a time, and through which the stomach contents can be repeatedly aspirated. At the British Medical Association discussion on intestinal obstruction in 1932 this

[1] Report of the Consultative Committee on Infant and Nursery Schools. H.M. Stat. Office. 2*s*. 6*d*.

procedure was advocated by several of the speakers, notably by Sir WILLIAM WHEELER.[1]

O. H. WANGENSTEEN and J. R. PAINE[2,3] have lately described a series of cases of obstruction, in which the duodenal tube was used to drain both stomach and small intestine by a process of continuous suction and siphonage. The tube they use is a smooth catheter-tipped duodenal tube which is passed into the stomach through the nose. They emphasise their opinion that siphonage alone is not enough and that it must be combined with suction if continuous drainage is to be effected. The reasons for this are that siphonage will stop as soon as any appreciable amount of air enters the duodenal tube, and that distension of the small intestine cannot be overcome unless the gas is removed as well as the fluid, which is impossible by siphonage alone. The apparatus used by WANGENSTEEN and PAINE to produce suction is very simple. A large bottle is slung above the head of the patient's bed in an inverted position. The bottle is almost filled with water, and through its neck passes a long straight glass tube, whose upper end passes above the level of the fluid in the bottle, while the lower end is directly connected to the duodenal tube. A short glass tube passes through another opening in the cork of the bottle and is connected to a long rubber tube, whose lower end lies below the surface of water in another large bottle standing on the floor beside the bed. Suction on the duodenal tube is effected by passage of water from the upper to the lower bottle. The tip of the nasal tube in many cases passes through the pylorus; it is therefore advisable to make several openings in the tube for nine to ten inches back from the tip, thereby allowing for simultaneous drainage of stomach and intestinal contents. The amount of negative pressure varies directly with the difference between the vertical level of the tip of the tube in the stomach (or duodenum) and the surface of the fluid in the lower bottle. A difference of two feet six inches has been found convenient.

Continuous suction of this kind has been employed with no little success in cases of simple (non-strangulated) obstruction, either as a preliminary to surgical relief or, in cases of paralytic or spastic ileus, without subsequent recourse to operation. The most notable success has been in cases of post-operative (immediate or remote) obstruction due to adhesions. The main contra-indications to a period of preliminary suction, and therefore of delay in operating, are suspicion of strangulation of the bowel and the presence of obstruction of the descending colon. Where there is strangulation—as in obstruction by hernia, volvulus, and intussusception—the blood-supply to the bowel is compromised and delay may be fatal. In obstruction of the descending colon the small intestine is seldom distended, and its drainage is therefore useless.

[1] Brit. Med. Jour., 1932, ii., 540.
[2] Surg., Gyn., and Obst., November, 1933, p. 601.
[3] Jour. Amer. Med. Assoc., Nov. 11th, p. 1532.

ANNOTATIONS

GENERAL MEDICAL COUNCIL: THE EXCLUSION OF MEMBERS OF DEFENCE SOCIETIES

AT the meeting of the General Medical Council on Friday, Dec. 1st, during the consideration of the case of a practitioner charged with canvassing, seven of the 37 members of the Council present withdrew and took no part in the proceedings. The complainants in the case were the Medical Defence Union, and the practitioner against whom the complaint was made was a member of the London and Counties Medical Protection Society; three of the retiring members of the G.M.C. belonged to the Union, the other four to the Society. The case, which was an important and difficult one, led to the expression of an opinion by the G.M.C. that the practitioner's methods were contrary to public interest and discreditable to his profession of medicine, judgment being postponed for a twelvemonth. The effect of the withdrawal was that during the whole of the hearing of this case there was present no representative of either of the English Royal Colleges or of the University of Cambridge; the president of the B.M.A. was excluded, and one of the direct representatives for England. During the hearing of another case on the following day, when a practitioner was charged with taking a commission, three members of the G.M.C. who belonged to the Medical Defence Union withdrew and took no part in the proceedings, as the practitioner was a member of the Union and was accompanied by its solicitor. If this sort of thing is to continue, can it be held that the General Medical Council in its disciplinary capacity is representing all sections of the medical profession and all shades of professional thought? The exclusion of so many members of the Council—and, in the nature of things, some of those most closely associated with the rough and tumble of medical practice—might indeed be unfair to someone charged before the Council with an offence; surely a practitioner in distress has an implied right to the potential attendance of these very members. Would it not be better for the Council to require that none of its members should have entangling alliances which prevent them from taking part in its proceedings? If it would be a hardship for any of them to surrender their membership of the protection societies, they might be allowed to remain in benefit on the understanding that during their period of membership of the G.M.C. they should take no part in the affairs of the society.

RESEARCH ON ASTHMA

SIX years ago the Asthma Research Council arose in answer to the challenge that there was no known cure for asthma, but the work of the Council has been shaped not directly to the discovery of a cure but to find any link in the long and intricate chain of evidence as to what are the causes of asthma. The advisory committee of which Dr. A. F. Hurst is chairman, and Prof. R. J. S. McDowall vice-chairman, includes clinicians actively interested in this evidence in London, Edinburgh, Glasgow, Belfast, and several large provincial centres. The report for the year 1932 which has just been issued shows how wide the net has been spread, investigations having been carried out at a number of centres. In an appendix it may be seen how much of this work has been published in our own columns. At the

Guy's clinic further work has been carried on to determine any differences there may be between the make-up of the asthmatic and the healthy individual. There seems to be no important difference between the blood pressures of asthmatics and normal people, but asthmatics have a diminished resistance to infection although there is an antagonism between asthma and tuberculosis. Work is also proceeding on the significance and mechanism of the eosinophilia of asthma and into specific sensitisation, especially the action of Oriel's proteose. In the massage department the treatment of asthma by respiratory exercises is being pursued. At the Ormond-street clinic more than 350 new cases of asthma were investigated during the year, allergic conditions being treated on a large scale. Neither ephedrine nor pseudo-ephedrine is found entirely to prevent asthmatic attacks. In the hay-fever clinic results have been most encouraging with a concentrated solution of the mixed grasses to which the patients reacted. A special milk in the treatment of infantile eczema has been worked out and is now marketed. The St. Mary's clinic is still growing. No patient, it is said, who receives treatment for hay-fever fails to be cured, and desensitisation with massive doses of pollen extract seems to hold out a hope of permanent cure. In following up serum reactions it was found that bovine serum produces no sensitisation, an observation which may have practical outcome. The state of mind of the patient has been shown to affect the size and intensity of the dermal reaction very noticeably. At the King's College and University College clinics an extreme variability has been found in the potassium of the blood, and it was discovered that the injection of adrenaline brings about a rise of blood potassium by over 50 per cent. Work has been done on the osmotic pressure of perfusion fluids when tested on bronchial reactions. At the Leeds clinic 86 per cent. of the wool-sensitive cases were shown to have acquired sensitivity as a result of their occupation; after desensitisation most of them showed an increased tolerance and were able to return to their work. Good results have been obtained from intramuscular injection of a liver extract. The Council relies on voluntary aid for its financial support, something over £1800 having been received in answer to the wireless appeal of January last. It also receives an annual grant of £600 from the Halley Stewart trust, and this year a bequest of £50 was made by an asthma victim. The head office of the Council is at King's College, Strand, London, W.C.2.

VITAMIN D AND THE HEALING OF FRACTURES

A SERIES of animal experiments has been carried out by J. Morelle [1] at the University of Louvain to determine the effect of vitamin D, in the form of irradiated ergosterol, on callus-formation after fractures. Most of the observations were on fractures of the hind leg of the rat; in some cases both bones had been fractured, in others the fibula alone. Quite different results were obtained from administration of small and large doses of vitamin D in fractures of the fibula. To get any effect at all, it was found necessary to give more than 10 units a day: below that dosage callus-formation was not influenced. Therapeutic doses of 50 to 100 units a day, however, markedly accelerated the formation of callus—an effect not so well marked when a dosage of 1000 units a day was reached. With massive doses of ergosterol (7500 to 10,000 units), on the other hand, there was a retardation in the first appearance of the callus, and a slowing-down of the process of healing still evident two months after the fracture. Young animals were more resistant to the unfavourable effects of over-dosage than were the adults. Morelle thinks that the vitamin D works, not by influencing the general condition of the animal, but by specific action on the lesion in stimulating the proliferation of fibroblastic tissue. This falls into line with the observations of Grauer (whom he quotes), who found that large doses of this vitamin might give rise to the appearance of the lesions of osteitis fibrosa.

An apparent anomaly was discovered in the effect of very large doses of vitamin D in rats with a fracture of *both* bones of the hind leg. In these animals there was a rapid and exuberant production of callus. This is not an isolated observation, for it agrees with the experiments of J. A. Collazo and others. Morelle holds that this excess callus is a sign of vitamin-D intoxication. In these experimental animals the conditions where both bones of the leg are broken are quite different from those in fractures of the fibula alone, for in the former there is no possible method of satisfactory fixation. The result of this mobility, according to Morelle, is the production of an abundance of cartilaginous tissue at the site of the fracture, and it is precisely on this tissue that vitamin D is said to act with most effect. Clinical observations on the possibility of influencing the rate of consolidation of fractures by vitamin therapy have given conflicting results, so that considerable importance attaches to direct histological observations such as Morelle has carried out.

[1] Rev. Belge des Sci. Méd., 1933, i., 481.

OCULAR CONDITIONS IN DIABETES

THE connexion between certain affections of the eye and diabetes is a subject on which further light is thrown in an article by Mr. W. A. Gray published in the *British Journal of Ophthalmology* of October, 1933. The total number of diabetic patients examined by him was 583. The number of cases of retinal arterio-sclerosis in the series points to the probability that diabetes expedites degenerative changes in the vascular system. It is certainly not the sole factor in causation, since degenerative changes appear to be absent in the young. Even slight evidence of vessel change in the retina is important, however, because they indicate that more pronounced changes may exist elsewhere. Diabetic retinitis is a well-known phenomenon, the signs being retinal exudates and hæmorrhages, either in combination or alone. Out of 500 diabetics these signs were observed in 66 cases. They are sometimes, but not always, associated with high blood pressure and albuminuria, but not specially with arterio-sclerosis. A characteristic form begins with whitish-yellow spots in the central part of the retina.

A reduction in intra-ocular tension occurs in a large percentage of cases of diabetic coma. The effect of an overdose of insulin is to produce a condition which resembles coma, and it is not always easy without a history to distinguish between the two states. The soft eye might therefore be an important point in diagnosis, but there is no convincing evidence on this point. Vitreous hæmorrhage is especially prone to take place in diabetics with arterio-sclerosis. In seven cases observed the vitreous hæmorrhage had occurred while the patient's diabetes was fully controlled by treatment. These cases have been found to be constantly associated with an infective focus somewhere in the body.

In most of the diabetic patients who develop cataract it is indistinguishable from ordinary senile

cataract. Rarely, however, a peculiar form consisting of small subcapsular opacities may be observed. This true diabetic cataract occurs in young patients with severe diabetes; in this series only two such cases were seen. The average age of those developing ordinary senile cataract appears to have been lower than is the rule in non-diabetic cases; moreover, a history of septic infection was not uncommon. Ocular palsies are known to be liable to occur in diabetics; according to Mr. Gray no muscle supplied by the third, fourth, or sixth nerve is exempt, while the sixth nerve seems to be especially vulnerable. No mention is made of changes in the refraction of the ocular media which have been observed in diabetes and which are usually of a temporary nature. Otherwise his review is very complete. It is satisfactory to be assured once again of the value of insulin medication for diabetics undergoing ophthalmic operations. The prognosis of cataract needlings and extractions in diabetics is said to be as favourable as in healthy members of the community.

INOCULATION AGAINST WHOOPING-COUGH

THE results of the vaccine prophylaxis of whooping-cough are far from being consistently favourable and it is generally agreed that to use old stock vaccines is, in any case, to court failure. L. W. Sauer[1] insists that the vaccine must be made from recently isolated strongly hæmolytic strains of the Bordet-Gengou bacillus grown on Bordet medium prepared with fresh defibrinated human blood. The dosage, he says, must be very much larger than that commonly employed, and further an interval of several months must be allowed to elapse between injection and exposure in order that immunity may develop. Sauer, like T. Madsen,[2] recommends a vaccine containing 10,000 million bacilli per cubic centimetre, but whereas Madsen injects doses of 0·5, 0·7, and 1 c.cm. intramuscularly or subcutaneously at intervals of three or four days, Sauer injects a first dose of 1·0 c.cm. into each deltoid; this is followed a week later by a dose of 1·5 c.cm. into each biceps and a week later still by a similar dose into each triceps. The total volume of vaccine injected is thus from 7 to 8 c.cm. Reactions, which are due entirely to dead bacilli and endotoxin and which may be local or systemic (transient pyrexia), are not troublesome at any age and in infants "surprisingly mild." Small nodules may persist for a few weeks at the site of each injection. During the years 1928–32 inclusive, 394 susceptible children, whose average age was eighteen months, were injected some months before exposure. Susceptible older children in most of the families served as controls. In the course of five years 31 control children in 24 of the families contracted typical whooping-cough and 29 of the injected children were intimately exposed throughout the attack, playing and sleeping with the patients. No injected child contracted the disease. In two families of three children each, an infant contracted the disease from a control but the third child in each family, injected three years previously, escaped. In one family, twin controls contracted whooping-cough simultaneously during a school epidemic but their younger sister, injected four years previously, escaped. Each of 12 control children with typical attacks failed to infect an injected child in their families in spite of the closest contact throughout the whole period of the disease. In a series of 394 injected children were 162 who were accidentally exposed to infection but none developed a cough "which in any way resembled pertussis." Madsen records the results of inoculation with fresh vaccines, a total of 22,000 million bacilli being injected, "shortly before" an epidemic of pertussis in the Faröe Islands in 1929. Amongst 1832 inoculated persons 458 escaped attack, whereas amongst 446 uninoculated inhabitants all except eight contracted the disease. Sauer considers that as the disease is relatively benign, except for the first two years of life, and as four months should elapse for immunisation to occur, injections should be started, preferably, between the ages of six and twelve months. Madsen has abandoned the inoculation of infants under one month of age since the occurrence of two fatalities in the new-born. It is clearly desirable that observations on a larger scale should be made with a view to confirming the important results obtained by Sauer from the use of fresh vaccines in very large doses, a long interval being allowed for between injection and exposure as he advises.

[1] Jour. Amer. Med. Assoc., Nov. 1st, 1933, p. 1449.
[2] Ibid., July 15th, p. 187.

A FATAL DISEASE OF SALMON AND TROUT

NEARLY forty years ago the cause of high mortality among trout and salmon in certain European rivers was identified[1] as a proteus-like organism, which gave rise to an intense septicæmia associated with necrotic areas in the muscles and subcutaneous tissues. The disease was investigated in 1902 by M. C. Marsh in America, but remained little recognised outside fish-farms until 1909, when widespread epizoötics began to occur in the summer months, the disease being first reported in this country in 1911. In 1925 several English trout rivers were infected, and salmon dead of the disease were found in two Scottish rivers; since then it has spread widely in England, Scotland, and Wales. Recurrence in the same rivers in successive years has been very irregular, since outbreaks are due to several independently varying conditions. Salmon and the different species of trout are chiefly affected, but grayling, carp, gobies, and a few other fish have occasionally acquired the disease naturally; gold-fish and also frogs are susceptible to infection by inoculation. In 1929 a committee was appointed by the Minister of Agriculture, under the chairmanship of Prof. T. J. Mackie, M.D., to make investigation and to report on the disease and methods of combating it. This committee has now issued its second report.[2]

The most obvious sign of the disease is the formation of one or more "furuncles" in the muscle or subcutaneous tissue—hence the name furunculosis. The lesions do not contain pus cells, but consist of necrosed and disintegrated tissues swarming with the causal micro-organism. These collections may discharge through openings in the skin or may track into the deeper parts. The *Bacillus salmonicida* is a Gram-negative, non-motile, non-sporing organism which grows readily on agar at 10°–20° C. but not at 37° C., producing a characteristic brown pigment. It is usually found in very large numbers in the kidneys and blood, as well as in the local foci. Furunculosis spreads readily amongst trout in an infected tank, and an outbreak may be set up by contaminating the water with a culture of the specific bacterium or by introducing fish which are infected either naturally or by inoculation. Under these conditions besides the fish which die of the disease other trout become carriers, though apparently unaffected, and the organism can be isolated from the kidneys. These carriers may remain healthy for many weeks, but probably all eventually succumb with septicæmia,

[1] Emmerich, R., and Weibel, C.: Arch. f. Hyg., 1894, xxi., 1.
[2] Second Interim Report (June, 1933) of the Furunculosis Committee. H.M. Stat. Office. Pp. 81. 2s. 6d.

especially if the water becomes warm or other conditions are unfavourable. A temperature of 55°–60° F. in natural waters has been shown to coincide with an epizoötic of furunculosis. In a tank containing infected water a rise of temperature to 60° F. rapidly induced deaths from the disease, but at 70° F. the spread of disease was less active. Sewage or other pollution may occasionally predispose to infection, but epizoötics are rarely associated with pollution, and often occur in very pure waters. Experimentally, deficiency of oxygen, though soon causing a high mortality, does not appear to conduce to furunculosis. The occurrence of natural epizoötics is very irregular in different seasons, but in the case of salmon, if there has been sufficient rainfall to allow the fish to ascend the river, low water and crowding of fish below falls and a high temperature appear to be the chief determining factors, provided a source of infection is present.

The infection is probably perpetuated from one season to another by trout which are carriers. Salmon are especially liable to be attacked soon after entering a river, and this has given rise to the idea that they bring the infection with them from the sea. The supposition is unlikely because the organism does not survive in salt water. The suggestion that young fish are infected in one river, become carriers and retain the infection in the sea, and then in the following season take the disease into a new river is not borne out by the negative results obtained from the examination of a large number of smolts caught on their way down to the sea. Sea trout and grilse taken from salt water and placed in infected fresh water die rapidly of furunculosis; the recurrence of furunculosis in certain rivers but not in others nearby points to the infection starting from a local focus in the fresh water. The spread from one river to another is probably chiefly due to the introduction of infected (but apparently healthy) fish from infected fish-farms at home or abroad. It has been shown that the ova are not infected internally and can be disinfected; even eggs which have been heavily contaminated artificially on the outside can be freed from infection by immersion in a 1 in 2000 solution of acriflavine without impairing their vitality. It is curious that fry and young trout under a year old are very resistant to infection and do not readily become carriers. Besides infected fish no other source of *B. salmonicida* has been discovered.

As a result of its exhaustive inquiry the committee has recommended the prohibition, for stocking waters in this country, of the importation of live fish from abroad liable to infection, and has urged that our own fish-farms should be inspected and controlled. The Minister of Agriculture stated on Monday in the House of Commons that it was hoped to introduce this session a Bill to deal with the recommendations of the report.

BIRMINGHAM CONFERENCE ON MENTAL RESEARCH

ON Nov. 27th a conference was held at Hollymoor, Northfield, under the auspices of the Birmingham Joint Board of Research for Mental Disease, with the object of stimulating research into the origins of mental disorder and of inviting coöperation amongst the mental hospitals in the Midland Counties. Dr. F. A. Pickworth, director of the board, pointed out in an address that of the total sum expended on treating mental disorder in England and Wales not a halfpenny in the pound was spent on fundamental research into its primary causes. He contrasted this parsimony unfavourably with the expenditure on cancer research, expressing a doubt whether the suffering from mental disease might not even surpass that caused by cancer. One of the reasons for meagre public support was, he thought, the exaggeration of the hereditary factor in mental disorder which resulted in an attitude of hopelessness. He defined some of the limitations imposed on the research worker in mental disorder, the chief of which was the lack of correlation with general medicine. Sir Gilbert Barling, who presided, said he had always held that research into mental disorder should be greatly extended, and he felt the need of some central institution where this work might be coördinated. At his suggestion it was decided to appoint a small committee to inquire into the possibility of forming liaison between the medical men concerned with mental work, as a preliminary step towards the setting up of such a centre. The conference was attended by 26 superintendents or assistants of various mental hospitals in the Midlands, and there were also present Sir Hubert Bond, representing the Board of Control; Dr. Stanley Barnes, dean of the medical faculty; and Dr. H. P. Newsholme, medical officer of health. Exhibits were shown from 15 of the mental hospitals, and the board had organised a remarkable collection of pathological exhibits.

RESISTANCE TO COLDS

QUITE a number of voluntary "censuses" have been made in recent years, especially in America, of the attacks of upper respiratory disease suffered by various groups of persons over a period of one or more years. They agree in showing that with people of the same social class, and living, as far as can be determined, under uniform conditions of exposure to the risk of attack, there is a good deal of variation in the number of "colds" actually acquired during any period of observation. Among college students, for instance, it has been found that quite a high proportion will suffer as many as four or more attacks in an academic year, while an equally high proportion will succumb only once or escape entirely. This, at first sight, merely suggests a confirmation of the common observation that there are wide differences in individual immunity to colds, whether inherent or acquired. But in fact it is not safe to accept "common observation" in such a case at its face value. In the first place we have no adequate measure of the exposure to risk—whether it is really equal between the susceptible and the apparently immune—and secondly the period of observation is often too short for it to be determined whether the not-attacked are indeed immune, and escape attack permanently, or whether they have escaped for a relatively short period of time merely by the operation of the laws of chance.

William M. Gafafer and James A. Doull,[1] working with a grant from the John J. Abel fund for research on the common cold, have tried to solve this problem. As material they take first the distribution of the number of attacks of upper respiratory disease suffered by 366 Wellesley College freshmen in the winter of 1919–20, and by 343 medical students in the Johns Hopkins University in 1929–30. Amongst these there were reported 849 and 901 attacks respectively. The distributions of these attacks—that is, the number of students suffering during the period of observation from 0, 1, 2, 3, &c., colds—are found to be fitted reasonably closely by simple binomials. In other words, it is not improbable that in these two experiences the colds were distributed

[1] Amer. Jour. Hyg., November, 1933, p. 712.

merely by chance, and therefore, apparently, differences in degrees of immunity did *not* exist amongst the students.

A somewhat simpler process of analysis is applied to other records collected under the Abel fund, which provide sufficient data for it to be seen whether "cold-resistants" and "cold-susceptibles" remain in those categories for any length of time. The method here adopted was to correlate the number of attacks suffered by the individual in different years, for if stability of resistance really exists the susceptibles should always show a relatively high attack-rate, and the resistants a relatively low attack-rate. Although the degree of relationship is somewhat less than might be expected there is certainly a tendency for persons to remain in the same class at least for successive years. To this extent the observations contradict the previous ones. But with an increasing interval the relationship becomes less distinct, and for a group of students observed in 1928–29 and again in 1931–32 there is scarcely any indication of individuals remaining in the same class. Further available data comprise the results of continuous observation for three academic years of 111 students and for four academic years of 45. From these figures can be computed the average number of colds suffered in subsequent years by students who were attacked varying numbers of times during the first year. The process can, of course, be reversed, and for individuals suffering some selected number of attacks in the last year of observation the previous history can be analysed. The interesting fact emerges that, in general, the trend of "the average number of colds reported by those suffering few or many colds when projected into the future or back into the past is towards the average or mean number reported by the entire population." In other words, this population, observed for a reasonable length of time, shows no stability of resistance or susceptibility to colds. This result is so far opposed to general belief that the authors' data and analysis deserve careful attention and further work for the confirmation of their conclusions.

THE HISTORY OF OPHTHALMOLOGY

A FEW months ago Dr. R. R. James published in book form [1] a series of studies in the history of ophthalmology in England prior to 1800 which had previously appeared in the *British Journal of Ophthalmology*. Now Dr. Alfred Bader, of Basle, has supplied a welcome complementary volume which deals with the development of the knowledge of diseases of the eye, especially in Switzerland, during the eighteenth and nineteenth centuries.[2] He points out that at the beginning of the eighteenth century knowledge of the eye was still very scant. Cataract, or "graue star," was not thought to be connected in any way with the crystalline lens, but was imagined to be a sort of curtain formed behind the pupil by the falling down of deposits formed in the fluid of the eye (hence the term "Cataracta"). The functions of the retina were unknown; therapy consisted largely of superstitious rites, and though the operation of couching for cataract was performed, it was justly considered so uncertain in its results that the orthodox surgeons preferred to leave it to itinerant quacks who performed in public with all the paraphernalia of the showman, sometimes obtaining sensational "cures" as the immediate result of a successful depression of the lens; in which event, it is said, the operator would demand a heavy fee from the astonished victim. If it was refused, he would seize his head and, while bending it forwards, give it such a good shake as to cause the displaced lens to fall forward into the anterior chamber, and so punish him by making him blind again.

The process of replacing this mixture of superstition and charlatanry by scientific knowledge and skilled practice was a long one. Michel Brisseau, a French military surgeon, was the first to discover the real nature of cataract in 1705 by the simple process of making a post-mortem examination. His assertion that it was possible to see in the absence of the crystalline lens was condemned by the Paris Royal Academy of Science as a "physiological absurdity." It was Heister, of Leyden, who in 1719 first claimed the operation for cataract as properly included in the province of surgery; Cheselden, of St. Thomas's Hospital, devised the operation of iridotomy in 1728, and in 1745 a Frenchman, Jacques Daviel, performed the first intentional extraction of the cataractous lens by means of a corneal incision. He seems to have been an admirable surgeon, and in contrast to the custom of his time did all he could to make his methods known to his professional colleagues. The same could not be said of an unqualified pupil of his, Michael von Wenzel, who was summoned to Vienna and is said to have purposely misled his Austrian colleagues; after his departure their attempts at extraction failed so that he himself had to be recalled. To this incident is ascribed the foundation of the Vienna school of ophthalmology. The court founded a professorial chair in 1773 with Barth as its first occupant, and from that date Vienna has remained a world-famous ophthalmological centre. During the first half of the nineteenth century the work of Thomas Young, the Englishman, on the physiology of vision was important. In Paris, after a period of stagnation during the Napoleonic era, a revival of ophthalmology was due to Sichel, who founded a private eye clinic, and his pupil Desmarres (1810–1882). They had to combat the opposition of the professors of surgery who strove to prevent ophthalmology from becoming a specialty and so obstructed progress. In Vienna the chair of ophthalmology was officially separated from that of surgery as early as 1812, and in 1818 the study of ophthalmology was made compulsory for medical students. One of the best known professors was Joseph Beer, whose text-book was for long the standard work on the subject.

The most epoch-making advances in the theory and practice of ophthalmology date from the middle of the nineteenth century, being associated with the names of Helmholtz (Königsberg), Donders (Utrecht), Albrecht v. Graefe (Berlin), Bowman (London), and Arlt (Vienna). The ophthalmoscope of Helmholtz opened up a new world to be conquered. Donders's was the first scientific treatise on refraction and accommodation; von Graefe in his comparatively short life (1828–1870) achieved a well-merited reputation. He introduced iridectomy for glaucoma, improved the operation for cataract by his modified linear method performed with his well-known knife, founded the *Archiv für Ophthalmologie*, which is still one of the chief ophthalmic periodicals, and did much to promote a spirit of comradeship with his colleagues, especially through the annual meetings of the Heidelberg Ophthalmogische Gesellschaft, constituted in 1863. It was to von Graefe more than to any other individual that

[1] See THE LANCET, 1933, i., 1356.

[2] Entwicklung der Augenheilkunde im 18 und 19 Jahrhundert mit besonderer Berücksichtigung der Schweiz (Nachlass von Prof. Horner, Zürich). Von Dr. Alfred Bader, Augenarzt in Basel. Basel: Benno Schwabe and Co. 1933. Pp. 231. 10 Swiss francs.

the movement to make ophthalmology a specialty apart from general surgery gained a firm footing in Germany. Several of his pupils were appointed to new chairs in various Prussian universities. Vienna had been the pioneer in this movement half a century earlier. In France the same tendency appeared later, and in England later still. The advances in the technique of cataract extraction are illustrated in a table giving the percentage of failures of well-known operators at different epochs. Daviel's failures were 10 or 11 per cent.; Friedreich v. Jäger, a century later, who was the first to use the upper corneal incision instead of the lower one, failed in 4·5 per cent. of his cases; Albrecht v. Graefe with his modified linear incision (1866) reduced the figures to 2·8 per cent. Subsequently, with first antiseptic and finally aseptic methods, the failures have been brought down by good operators to under 0·5 per cent.

Dr. Bader dedicates his work to the memory of the Swiss ophthalmologist, Friedrich Horner, who was the predecessor of Prof. Haab at Zürich. Its second half consists of reprints of an interesting series of letters to Horner from some of the foremost ophthalmologists of his day, revealing pleasant personal relations between German-speaking colleagues.

THE LATE RESULTS OF PHRENICECTOMY

On November 14th Prof. E. Rist and Dr. Auerbach told the French Academy of Medicine about the after-history of the first 200 patients treated by phrenicectomy in Prof. Rist's hospital between October, 1923, and June, 1931. Twenty of them could not be traced, and the fate of the remainder was singularly disappointing. There were, indeed, as many as 100 who, six to eight months after this operation, seemed well on the way to recovery, but from two and a half to ten years later only 26 recoveries could be claimed, apart from the 16 cases in which some improvement had been maintained. Thus in only 21 per cent. did the test of years credit this operation with some degree of success. On the other hand, as many as 86 were found to have died, and 36 had had to undergo an extrapleural thoraco-plastic operation because of relapses. Among the 100 who at first responded satisfactorily to the operation were 25 of the 26 included among the ultimate recoveries, and all the 16 who maintained some degree of improvement. Of these 100, 79 had supplemented the operation by living under sanatorium or quasi-sanatorium conditions, with continuous medical supervision, for six months to two and a half years. This group contained all but four of the 42 patients who derived permanent benefit from the operation. Among the 21 patients who profited early from the operation but who did not supplement it by sanatorium treatment only two were found to be cured, and one improved on re-examination. Among the 80 patients who did not derive even transitory benefit from the operation, there was only one who ultimately recovered, and this patient had undergone sanatorium treatment. The lesson of these observations is obvious. Unless the early benefits of phrenicectomy can be supplemented by the systematic rest and continuous medical supervision of the sanatorium, they are not likely to be maintained. The artificial pneumothorax gives better ultimate results because it entails periodic injections which in their turn imply medical control. The chief advantage claimed for phrenicectomy over an artificial pneumothorax is the freedom the former confers on the patient who has no irksome secondary operations—i.e., refills—to anticipate. But probably it is just this unpleasant discipline and all it implies which often saves the patient's life.

POLIOMYELITIS VIRUS AND NORMAL SERUM

The occurrence of acute anterior poliomyelitis in epidemic form in Melbourne during three successive years 1929–31 suggested that the pooled serum of the normal inhabitants might have a considerable antiviral activity. R. Southby and Margot McKie [1] undertook a series of experiments on macacus monkeys to investigate the neutralising effect of the serum of apparently normal adults when mixed with virus in vitro. The serum of 32 normal donors living in Melbourne was pooled and compared with the antipoliomyelitis human serum prepared from convalescents by Jean Macnamara and F. G. Morgan.[2] It was found that a virus obtained locally from a child that had died of the disease was highly virulent for a monkey, and this strain was used after passage through monkeys for these experiments. The tests which they made showed that whereas rather more than 0·6 c.cm. of "normal" serum was needed to neutralise 0·5 c.cm. of virus emulsion when mixed with it in vitro, 0·3 c.cm. of the convalescent serum had the same effect, though the results were not quite regular. In further experiments made to compare the local virus with a strain from the Rockefeller Institute in New York, it was found that an attack of poliomyelitis in a macacus following inoculation with the local virus would protect the monkey against the American virus, if this were inoculated after recovery from the illness. It was concluded that the difference in immunising effect of strains from Melbourne and New York respectively which had been found by Macnamara and F. M. Burnet [3] was probably due to unequal virulence rather than to antigenic diversity. The experiments also showed that the degree of immunity following an attack in an inoculated monkey was very unequal in different individual animals.

Dr. J. Alison Glover, F.R.C.P., has been appointed senior medical officer to the Board of Education in succession to Dr. Ralph H. Crowley. He takes up his duties there in February.

Dr. Paul Richer, who died in Paris on Monday last at the age of 84 years, was distinguished equally as pathologist and sculptor. A pupil of Charcot and then his collaborator at the Salpêtrière, Richer was for many years laboratory chief of the clinic for nervous diseases. He held the chair of anatomy at the National School of Fine Arts, designed the monument to Pasteur at Chartres and many of the medals struck in commemoration of medical events. He was a member of the Académie de médecine and the Académie des beaux-arts.

[1] Med. Jour. Australia, 1933, ii., 404.
[2] THE LANCET, 1932, i., 469, 527.
[3] Brit. Jour. Exper. Path., 1931, xii., 57.

CARNEGIE AWARD TO A MEDICAL MAN.—The Carnegie Hero Fund trustees have made an award to Dr. Hugh Robert Kendal, of Westerhope, Newcastle-on-Tyne, in recognition of his action in the rescue of a boy trapped in a coal mine. The boy's fingers were caught in a collapse of stone and had to be freed by amputation. The operation took 45 minutes, during which time Dr. Kendal had to lie on his back in a space 19 in. high and 2 ft. wide—a further collapse of about 100 tons of stone being possible at any moment. Dr. Kendal is the son of Dr. C. R. Kendal, of Hexham.

THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures in progress during the Winter Session at King's College Hospital Medical School

IX.—THE ROLE OF VITAMINS AND INORGANIC SALTS

APART from the proteins, fats, and carbohydrates and, of course, water—which constitute "food" and "drink" to the man in the street, normal growth and health depend upon adequate supplies of a number of organic and inorganic substances, and it is about these that I wish to speak to-day. I've "got a little list" here which differs from Koko's more famous one, for its constituents would all of them be missed :

ORGANIC ESSENTIALS	INORGANIC ESSENTIALS
Vitamin A (or carotene).	Sodium.
,, B1.	Potassium.
,, B2.	Calcium.
,, B3.	Magnesium.
,, B4.	Iron.
,, B5.	Copper.
,, C (ascorbic acid).	Manganese.
,, D (calciferol).	Chlorine.
,, E.	Iodine.
	Phosphorus.

Now of the B-vitamins 3, 4, and 5 are very interesting scientifically, but so far they have not been shown to have any clinical application ; 4 is necessary for the well-being of rats, and 3 and 5 for the well-being of pigeons, but as few are interested in breeding rats, and as most of you gave up keeping pigeons when you went to your first boarding-school, these three may be crossed off our rather formidable list.

The Inorganic Essentials

Turning to the inorganic essentials *potassium* is the predominating base of all cellular tissues, whether animal or vegetable. There is no fear of any deficiency, and as an excess is easily removed through the kidneys, dietetically potassium presents no problems. *Magnesium* also is an element which is essential to life. A deficiency of magnesium has been shown recently in America to lead to a very definite syndrome in animals. Miss E. Watchorn and I have been interested in this subject for some time. We have found that a chronic shortage of magnesium in young rats may lead to bony changes ; post mortem the ribs are bent and the costochondral junctions enlarged. The long bones appear to be brittle. Oddly enough, however, even when animals are dying of a magnesium deficiency their muscles and internal organs may contain almost if not quite as much magnesium as the controls. There is little likelihood, however, of any of you running short of magnesium, and a moderate excess does no harm, being got rid of partly by the fæces and partly by the urine, so we need not consider it further.

Manganese is an element which appears to be essential for the normal reproduction of experimental animals. Man undoubtedly needs some too, but most foods contain traces, and it has not yet been seriously suggested that lack of manganese plays any great part in human sterility, or that any of us are in danger of a shortage or surfeit of this element. We may here dismiss *vitamin E* with equal dispatch. Without this vitamin rats conceive normally but fail to form a placenta and abort, but it is widespread in Nature, and has not yet been generally accepted as having clinical application.

SODIUM

If I had been giving this lecture 2000 years ago I would probably have devoted most of it to a discussion of common salt. We are apt to forget nowadays what tremendous importance these two common elements, *sodium* and *chlorine*, have played in the field of preventive medicine. They have always been considered together, and will be so considered here to some extent for the sake of convenience, but I cannot emphasise too strongly that it is quite wrong to think of the sodium in the body as sodium chloride. Muscle tissue does not contain enough chlorine to hold all its sodium, and some of the sodium in the blood-serum is, as you know, combined with bicarbonate as alkaline reserve. I need only mention the excess of sodium bicarbonate in the pancreatic juice, and of hydrochloric acid in the gastric juice to remind you that the function of sodium and chlorine must be considered separately. Given sodium chloride, however, the body finds no difficulty in separating the two elements, keeping the sodium as bicarbonate, or in any form required, and excreting the chlorine as ammonium chloride in the urine.

Although the body as a whole contains far more potassium than sodium, blood-serum and all intercellular fluids contain about 300 mg. of sodium per 100 c.cm.—i.e., 15 times as much sodium as potassium by weight. Milk contains enough sodium for the growing animal, and on flesh food generally man could live without added salt. Now plants tend to contain very much less sodium than animals, and relatively more potassium. They may contain the merest traces of chlorine. With the introduction of agriculture millions of years ago, the change in the dietetic habits of the people brought trouble in its train. Our forefathers began to suffer from a shortage of salt, and developed a craving for it. Salt became a necessity of life.

Ancient literature is full of references to the importance of a salt supply and indeed people regarded a salt spring as a gift from the gods. According to Aristotle the Chaonims of Epirus had a salt spring which ran into a stream in which there were no fish and the legend had it that the gods had allowed them to have salt instead of fish. At some very early time salt acquired a religious significance which is easy to understand. The gods who gave the kindly fruits of the earth were worshipped as the givers of "bread and salt." Possibly some of you remember the verse in Leviticus II., 13—"And every oblation of thy meat offering shalt thou season with salt, neither shall thou suffer the salt of the covenant of thy God to be lacking from thy meat offering : with all thine offerings thou shalt offer salt." As the rest of this chapter shows clearly, meat here does not, of course, mean flesh but cereals.

In the twentieth century people here are apt to forget the value of salt. Its popularity as a votive offering has certainly declined. Mrs. Jones, for example, does not feel compelled to send a packet of Saxa to the harvest festival to go with the vegetable marrow. Our cooks see to it that we have an abundance, and there is no danger of an excess. It is quite otherwise, however, with the domestic animals. In Kenya and other places far from the sea, salt is a most important addition to the cattle feeds and is, I understand, an important ingredient of some of the poultry foods. Curiously enough in modern medicine salt has fallen from its high estate ; we never add it to anyone's diet. We quite often, in fact, employ salt-free diets for the prevention or cure of œdema, and we do so because water can only accumulate in the body when there is enough salt available to raise its osmotic pressure to physiological limits.

IODINE

We now consider for a moment the problem of that fascinating element, *iodine*. You all of you know how the minute amounts in the food are picked out from the circulation by the thyroid gland and synthesised to thyroxine, which in turn regulates our metabolism. Now iodine was discovered in 1811 by Courtois, and its presence in sponges was detected four years later. It is of interest that burnt sponges were being used for the treatment of goitre before the Athenians built the Acropolis—almost before the dawn of history. It is no new suggestion either that endemic goitre is due to an iodine deficiency. Coindet originated it in 1820, and it was under discussion all the nineteenth century. Since the war, however, it has been extensively investigated in men and animals in Switzerland, New Zealand, and America. It has been shown that in those areas where goitre is endemic the intake of iodine is low, and, further, that the addition of iodine to the water-supplies is a most important therapeutic measure. Unfortunately the story is not quite so simple as this, for all goitres are not cured by iodine, and in England the goitres in some of the endemic areas do not respond well to iodine. In Derbyshire, for example, it seems there must be some other factor, and we have evidence that this is connected with pollution of the water-supplies, and possibly with the amount of calcium and phosphorus in the diet.

How much iodine do we need? I could probably maintain iodine equilibrium on 0·000015 of a gramme per day, but to be on the safe side I should probably have between 0·00003 to 0·00005 g. Children need more, especially at puberty and other periods of rapid growth, and should probably have round about 0·000015 g. per day. These are very small amounts. Let us suppose my daily ration of iodine were magnified to a thing about the size of a pill and weighed one gramme. Then if my other food and drink were magnified in proportion, my pint of beer would fill a large cistern or a small swimming tank 13 ft. 4 in. long, 5 ft. deep and 10 ft. wide, and my total daily intake of food and drink would weigh about 90 tons. There is probably enough iodine in most people's food for their requirements, and there is no justification for interfering with the ordinary person's iodine metabolism. In the endemic areas it may not be so, and even in healthy parts of the country adolescent goitres which respond to iodine are not rare. Treatment should be by minute doses. Natural foods never produce signs of iodism, but large doses of iodine or iodides easily produce pustular rashes and other signs of excess.

IRON AND COPPER

You will remember how economically the body makes use of its *iron* supplies; how it conserves the iron from the disintegrating red blood corpuscles and stores it in the liver and spleen ready to use again. Owing to this process we can live on a low iron intake, and a good diet generally contains plenty of iron for the normal man or woman. The main sources of supply are meat, green vegetables, and the pots and pans. Although anæmia is the first sign of iron deficiency, all anæmias are not, of course, due to this, and of those that are I only propose to discuss that one which lends itself so readily to preventive therapy: I mean the nutritional anæmia of infants.

Milk contains very little iron. Nature has to some extent overcome this lapse on the part of the mammary gland by arranging that the fœtus shall be born with enough iron stored in its body to meet its requirements over the sucking period. There is a tendency for these stores to be used up before the child is put on to food containing much iron and anæmia ensues. Premature infants are particularly liable to this form of anæmia for they are thrown out upon the world before they have had time to make up their stores. Artificially fed babies are also very liable for two reasons: (1) cow's milk contains less iron; (2) cow's milk is generally diluted before being given to children and the supplements added contain no iron.

As you might expect, prophylactic treatment has excellent results, and if iron is added to the feeds there should be no anæmia. Medicated dried milks can be obtained. It is not strikingly beneficial to give the iron to the lactating mothers in the hope that they will pass it on through the natural channels. They will do so only to a limited extent, but this form of therapy should obviously be practised in the interests of mother and child during the months of pregnancy. The best salt to use is ferrous ammonium citrate, and the cost is negligible. This is a very important aspect of prophylactic medication, especially in the tropics where, I believe, it has not yet been tried out on a large scale.

Copper.—Like iron this element is stored by the fœtal liver, and the infant takes a store of copper with it into the world to last it till the milk period is over. We know that the hæmoglobin molecule contains no copper, and we know from animal work that copper is not necessary for the assimilation and storage of iron in the liver, yet in the absence of enough copper the synthesis of hæmoglobin fails and anæmia ensues. Theoretically, then, one should prescribe copper as well as iron for the nutritional anæmia of infants, and possibly for other anæmias, but in practice the medicinal iron salts contain so much copper as impurity that this is unnecessary. At the same time you need not be afraid of copper poisoning, even if you prescribe the massive doses of ferrous ammonium citrate, which are so popular to-day, so that we need not consider copper further.

CALCIUM AND PHOSPHORUS

I now wish to consider the position of calcium and phosphorus, and in connexion with them I shall discuss vitamin D. Muscles and glandular organs only contain small amounts of *calcium* (about 0·01 per cent.), but this small amount plays a very active part in membrane and cellular activity. Bones and teeth contain large amounts of mineral matter, and this is largely calcium phosphate. Tooth enamel, for example, contains over 80 per cent., dentine over 60 per cent., cement about 57 per cent., and bone 50 per cent. An abundant supply of calcium is obviously needed whenever active bone growth is taking place, so that children and pregnant women should have no lack; and since milk also contains relatively large amounts of calcium, lactating women require a high calcium intake. Unfortunately, the supply of calcium in our food tends to be on the low side. This is partly because we do not eat the parts of our food materials that contain most calcium, e.g., the bones, egg shells, &c., and partly because those foods that contain generous supplies of calcium, e.g., milk, sardines, sprats, herrings, and green vegetables, are either not generally popular or are rather expensive. There is, therefore, a real fear that some of the people in this country, for shorter or longer periods of their lives, are not getting enough calcium to maintain their calcium equilibrium.

Phosphorus is perhaps the most interesting inorganic constituent of the body. This may be merely because we know more about its ways at present than we do of the other elements, but even if we find out all

about magnesium, iodine, &c., I think the record of phosphorus will be hard to beat.

It is used in the proteins, it is used in the fatty membranes and in fat metabolism, in the nuclei, in the bones, in the regulation of the body's reaction and as for its part in carbohydrate metabolism—whenever the body wants to do anything to a carbohydrate molecule, even absorb it from the gut, it seems to turn it into a phosphate ester with incredible speed, to do what it wants to the molecule, and then to de-esterify it again with equal ease. Nothing can live without phosphorus; most living organisms require quite large amounts. It is not surprising, therefore, that somewhere in Nature demand should exceed supply. The annual growth of the ocean plankton, on which ultimately practically all animal life in the sea depends, is limited by the supply of this element, and some pastures contain too little for the herbivorous animals.

Flesh foods of all kinds, however, milk, some vegetables, and wholemeal bread all contain abundant supplies. Our food generally contains enough phosphorus for our needs.

Calcium and phosphorus are both absorbed from the small intestine. Chronic diarrhœa, especially the passage of bulky fatty stools such as we find in sprue and cœliac disease, may interfere with the absorption of calcium by holding the metal in the intestine in the form of insoluble soaps. It is therefore important in these and allied diseases to take steps to guard against hypocalcæmia and its distressing manifestations, such as tetany and laryngismus stridulus. Calcium metabolism and especially bony growth and organisation are at the mercy of several other forces. I need not dwell here upon the influence of the thyroid and parathyroid secretions. The former is not, as a rule, of much clinical importance, and gross abnormalities of the latter are rare, and their treatment hardly belongs to the realm of preventive medicine. We must, however, consider vitamin D.

Organic Essentials

VITAMIN D

Vitamin D is one of the fat soluble vitamins. It was definitely separated from vitamin A by McCollum and others in 1922, following E. Mellanby's work on rickets, and I cannot overstate its importance to preventive medicine in this country. Appropriately enough, therefore, this vitamin was first isolated in crystalline form by a team of workers at the National Institute for Medical Research, at Hampstead, in 1931. It is a sterol allied to ergosterol and formed therefrom by the action of light. 0·00003 g. per day will keep a child in health. This you will remember is about the amount of iodine adults require. In the absence of vitamin D, or calciferol as it has been christened, animals and children develop rickets, and I need scarcely remind you how prevalent this disease has been and still is in this country. In 1868–71 Gee and Ritchie estimated that 33 per cent. of the London and Manchester school-children had rickets. X rays and better diagnosis led Dick, McIntosh, and Newman, between 1920 and 1930, to conclude that 80 per cent. of a series of unselected children in London and Durham had rickets. Flagrant rickets, of course, appears to be rare compared with the large number of subacute and mild forms of the disease. Evidence has been accumulating, especially owing to the work of E. and M. Mellanby, that one of these not obviously rachitic forms of vitamin-D deficiency is "bad teeth." It seems that the proper development of the teeth and jaws is impossible in the absence of calciferol, and for perfect mouths optimum doses are required. Apart from development, vitamin D in optimum doses seems to confer considerable powers of resistance to caries even in formed teeth.

It is certain that the large bulk of our urban population are now living on barely sufficient vitamin D. Except for pregnant and lactating women, adults probably get on all right, but not so the children, and your duty is not done until you have satisfied yourself that every child under your care is getting enough of this vitamin.

The best evidence at present available indicates that children under one year should be completely protected by about 500 international units of vitamin D per day, and children over this age by 1500 units; 10,000 units per day constitutes a dangerous excess and I think it well to emphasise the dangers of overdoing vitamin D. At least one fatal case has been reported in this country and now that highly potent vitamin preparations are obtainable, and vitamin "fats" are becoming increasingly common, I expect to see others. Now how is this happy mean to be achieved? Few foods are rich in vitamin D. Butter fat and other animal fats contain a little, but milk, even breast milk, contains only a very little. The only two foods that contain much vitamin D are egg yolks and oysters, and the latter can hardly be recommended for children under two. On the other hand, we contain plenty of ergosterol in our skin and sunlight or artificial sunlight transforms this to vitamin D, so that if we are getting lots of sun we do not need to depend upon our foods for our vitamin D.

In dealing with a private patient it is well to consider the food and sunlight that the child is getting before prescribing a daily dose of vitamin D. The extra may be given as cod-liver oil or halibut-liver oil, but the concentrated preparations that can be taken in pill form are excellent and may be purchased with the strengths marked in units. Children of the hospital class should always be given extra vitamin D, even if they are being breast-fed. If the child is not at the breast and the parent not very intelligent, the easiest for all concerned would probably be to prescribe some of the milk preparations to which a standardised amount of the vitamin has been added by the makers—but these are expensive. The whole question seems almost to be one for the public health authorities.

VITAMIN C

Vitamin C, or ascorbic acid, as the pure crystalline substance has been christened, is the compound which protects us all from scurvy. Children need it, adults need it, everyone needs it; but fortunately nearly everyone in this country gets it and gets enough of it. The history of scurvy is a fascinating one. It was a scourge in the navy and on voyages of discovery till green vegetables and the juices of the citrus fruits were found both to prevent and cure. I must limit myself, however, to the prevention of scurvy among the civilian population. Practically speaking, this is the prevention of infantile scurvy, which is a well recognised but not very common disease occurring towards the end of the first year of life. Prevention is easy. Orange juice, tomato juice, or some other proved antiscorbutic, should never be omitted from an infant's diet, especially if the child is being artificially fed. Grape juice has little value as an antiscorbutic, and should never be used as such. It should be remembered also that pasteurising destroys about half the vitamin C in the milk.

VITAMINS B_1 AND B_2

Vitamin B_1 is the substance which protects from beri-beri, and beri-beri is a disease of the East caused by eating polished rice. There was no beri-beri till milling by machinery was introduced, but then the people gave up eating the home-ground rice which had always been good enough for their ancestors, and took to the lovely white product of the machine, with most disastrous results. History repeats itself; you

will remember what happened to the men of the early Stone Age when they took to agriculture. A change in established dietary custom is always a risky experiment.

Vitamin B_2 is one of the factors which prevents pellagra, a distressing disease of South Italy, the Balkans, and the Southern States of America, characterised by symmetrical rashes, stomatitis, salivation, dyspepsia, and diarrhœa. It is not a disease of this country.

The distribution of the B-vitamins in nature is wide and they are not easily destroyed by cooking. Eggs are a potent source. So is yeast and its extract Marmite, and wholemeal bread. Vegetables, fruit, milk, and animal organs all contain good supplies, and meat less but still appreciable amounts. There is little if any definite proof that a shortage of the B-vitamins ever occurs in this country.

VITAMIN A

Vitamin A is a substance which everyone, especially children, requires for normal growth and health. It is a fat-soluble substance which gives a specific colour reaction with antimony trichloride. It is related to carotene, the pigmented and unsaturated hydrocarbon. As the body can convert carotene into vitamin A, therapeutically the two may be considered together. Liver, butter, cream, spinach, carrots, dried whole milk, and cheese are excellent sources of vitamin A, and a great many other common foods contain appreciable amounts. There is not a great loss during ordinary cooking, so that one would not expect clinical deficiency of vitamin A to be common. Experimentally, young animals deprived of vitamin A ultimately cease to grow and develop night blindness and xerophthalmia, which is a non-specific infection of the lacrymal glands and conjunctival sac. In addition to the ophthalmia, infection of the mucous membrane of the alimentary, respiratory, and urinary tracts have been shown to be exceedingly prevalent in animals deprived of vitamin A. Lesions of the central nervous system can also be produced and female animals fail to ovulate. The infections are not of any one pathological type, and the organisms which gain a footing owing to the weakened resistance of the mucosa are of the type commonly found there in small numbers during health. Night blindness was recognised clinically at the time of Hippocrates, and it is interesting to learn that even then eating liver was the traditional cure. Xerophthalmia has been recognised clinically in Vienna, Denmark, and Japan, and very rarely in this country. Genuine clinical deficiency undoubtedly has been met with, but only on very unbalanced diets, which no authoritative person would have countenanced for a moment.

Conclusion

In conclusion I wish to make one or two generalisations about inorganic and vitamin therapy, and finally to sound a note of caution.

In the first place, I would like to draw a distinction between this group of diseases and the bacterial group.

The *prevention* of typhoid is brought about by improving sanitation and the cleaning up of the food-supplies, or, if this is not possible, one can do a great deal by vaccines, which were most efficacious during the war. The *cure* of typhoid involves quite different principles. If the patient does not die of toxæmia or weakness the natural reactions of the body will effect a cure and treatment consists in putting the patient in the best possible state to do this. In general, then, different medication is required for the prevention and cure of bacterial diseases. One has only to think of diphtheria, scarlet fever, and boils; but I need not multiply examples.

In diseases caused by vitamin or inorganic deficiency, on the other hand, exactly the same treatment brings about both prevention and cure. The whole object of medication is to provide a suitable supply—not too much and not too litte. In practice there is only one way to to this. Aim always at a good mixed diet. Add vitamins and the necessary salts where they are indicated, but do not be carried away by fads. Be cautious in transferring the results of animal experiments to human beings. Remember that rats don't get scurvy, and different species have totally different vitamin requirements. But always be wary of some deficiency when monotonous diets are being used, as, for instance, by the very poor. Under the category of monotonous I should certainly class the diets of infants and the rations prescribed for the treatment of gastric complaints, and I think too that some institution diets should probably be on the dangerous list. Mr. Augustine Courtauld, who spent a winter alone in Greenland in 1930 and 1931, part of the time completely snowed up, lived throughout on a most monotonous diet consisting largely of pemmican, margarine, and sugar which was quite free from vitamin C. He would undoubtedly have got scurvy but for the concentrated lemon juice which had been supplied in his ration.

Vitamin therapy just now is passing through rather an exuberant phase. Wonderful discoveries have been made, but exaggerated claims have been put forward based in some cases on too little evidence, and in others on a lack of scientific balance. Artificial sunlight is as good as vitamin D, but it is not a panacea for all ills. There is no real proof that the constipation so often seen in the out-patient department is due to too little vitamin B, and even the most massive doses of vitamin A will not cure pneumonia, or even prevent the common cold. Presently there will be a swing back against indiscriminate vitamin administration. I see signs of it already, and of course nothing can hold the field of popular therapy for long. When that happens, do not become cynical. Remember the ground that has been gained, the facts that have been proved; and continue to act upon them.

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Fire at a Mental Hospital.—It is reported that on Wednesday last week the administrative block of the Paregwyllt Mental Hospital of the Glamorgan county council was burned down. The fire did not reach the wards, in which there are about 1000 patients.

Sussex Provident Scheme.—Although the report submitted at the annual meeting at Brighton, on Nov. 25th, covered nine months only, it was reported that there has been a net increase of 2568 in the number of contributors, and 4864 in the number of contributors and their dependants. Hope was expressed at the meeting that very soon the total membership would reach 100,000, and so see the fulfilment of the ambition of the founder of the scheme, the late Dr. J. F. Gordon Dill. The total distribution made in respect of treatment of members was £16,297, made up as follows: £13,928 to the coöperating voluntary hospitals; £74 to associated voluntary hospitals; £1345 to infirmaries and educational authorities; and £438 to the coöperating Queen's Nurses' Association; the sum of £506 being refunded to members for treatment at non-coöperating hospitals, and for the extra benefits included in the supplementary section. Since the inception of the scheme in 1921, no less than £126,922 has been distributed under the above headings. Over £20,000 per annum is now going to the voluntary hospitals through the agency of the scheme.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Mental Disorder following Head Injury

IN a case tried recently before Mr. Justice Avory and a special jury the plaintiff, A. B., claimed damages for injuries resulting from the defendants' negligence. At the age of 53 he was stated to have been a strong, healthy, intelligent man. On Jan. 1st he was involved in an accident in which he was shaken and struck on the head. For a few moments he was unconscious and on regaining consciousness he complained of pains in his head. He went to bed. He lost the power of speech and became worse until at the end of six weeks it was decided to remove him to hospital. There he improved somewhat but on his return home he had a relapse. He is now able to walk, but unable to feed, wash, or dress himself, and he seems unconscious of his surroundings. He shows signs of hallucinations, fears, and morbid dreads. His relatives claimed that his present condition resulted from the blow on the head and in the action they called medical evidence to support this contention. The defendants maintained that the plaintiff was not suffering from any form of neurosis resulting from the accident and affirmed that he was suffering from a psychosis—namely, manic-depressive recurrent insanity.

Dr. A. R. Abelson said that he attended A. B. on the night of the accident. The patient had a slight swelling in the parietal region, was slightly dazed, and complained of great pain in his head. On the third day he showed signs of muttering delirium; he became stuporous. He grew worse and had incontinence of urine and fæces; he lay on his back and his eyes bulged. He was taken to hospital where he stayed for six weeks. On his return he showed great improvement; he was able to walk and talk. Later he relapsed and now, although he walks about aimlessly and mutters incoherently, he seems to be oblivious of his surroundings. At the sight or touch of things he shows terror. Dr. Abelson stated that in his opinion the possibility of recovery was remote. In cross-examination he would not agree that A. B. was suffering from manic-depressive insanity, nor would he admit that, if he was suffering from this form of insanity, such insanity could not have resulted from the accident.

Dr. E. A. Blake Pritchard said that he first saw A. B. on Feb. 9th. He was in bed and made little or no response to questions. He exhibited occasional tremors and muttered and showed signs of fear. After ten days he became more responsive, took food, and regained continence. In May he was definitely better, but in October he was again tremulous, restless, and apprehensive, and seemed unable to appreciate the meaning of a question or of a request. Dr. Pritchard believed A. B. to be suffering from traumatic hysteria due to a blow on the head. He thought it possible that he might recover but held that complete recovery was improbable and there was a risk of further relapse. In cross-examination Dr. Pritchard denied that one form of mutism might be due to neurosis and another form to psychosis. Nor did he agree that in hysteria a mute patient tried to communicate his wishes by other means. He denied that the course of this illness was typical of manic-depressive recurrent insanity and emphasised that A. B.'s mental alertness during his temporary recovery was inconsistent with psychosis. His pulse was regular and normal. This was an unusual case, admittedly not typical of neurosis. Finally Dr. Pritchard stated that A. B. showed no signs of mania, nor was he depressed, nor did he exhibit symptoms of insanity. Moreover, although he was now aged 54, there was no history of previous mental illness and the family history was good. In answer to the learned judge, Dr. Pritchard said that he had no personal knowledge of A. B.'s previous history or family history, and he agreed that so far as those matters were concerned he was merely stating what had been told to him by the patient's wife.

At the close of the plaintiff's case the jury intimated that they were satisfied that the plaintiff's condition had not resulted from the accident. Counsel for the plaintiff, however, insisted upon his right to address the jury and did so, whereupon the jury changed their minds and asked to hear the defendants' evidence. Counsel for the defendants then addressed the jury and proceeded to called his evidence. During the defendants' evidence the foreman of the jury again told the judge that they were satisfied that the plaintiff was not entitled to recover damages. The judge asked if the jury were unanimous, and the foreman asked if they might retire. The judge indicated that the only question was whether or not the jury were unanimous, whereupon a juror rose and said that they were not. Another juror then said that members at his end of the box were agreed! The judge accordingly ruled that the jury should hear all the evidence.

Medical evidence on behalf of the defendants was given by Dr. W. A. Brend, who said that for 16 years he had been on the neurological staff of the Ministry of Pensions and that during that time he had examined many soldiers suffering from mental diseases. He told how, on Sept. 25th, 1933, he had examined A. B. in the presence of Dr. Abelson, and had formed the view that he was insane. Dr. Brend went on to say that he thought that in A. B.'s case there must have been a history of mental disorder, that he had never seen insanity of this kind result from shock, that where insanity had followed serious head and brain injury the onset had differed from the onset in A. B.'s case, and that he did not agree that the patient was suffering from traumatic neurosis. On Sept. 25th he saw him lying on a sofa; he took no notice of conversation; he got up partly dressed and hugged his arms to his body; his eyes were staring and terrified; his lips moved but no sound emerged, and he wandered from room to room and looked demented. On careful examination, however, there was no sign of organic injury and the physical condition was normal. Dr. Brend held that this was not a case of hysteria. In hysteria the patient was intelligent and communicated by writing; A. B.'s lack of control was inconsistent with hysteria, and the fact that he slept well negatived his being a case of anxiety neurosis. In cross-examination Dr. Brend agreed that A. B. was not simulating, that in the recovery periods between attacks of manic-depressive insanity a minute examination might reveal signs of mental instability, and that there was no infallible test of insanity. He stated that he had never seen hysteria-muteness of A. B.'s kind, nor had he seen in hysterical cases similar incontinence and inability to feed, wash, or dress.

Dr. J. H. Churchill said that he saw A. B. on Jan. 31st. He thought this an amazing case and

regarded the lack of history of previous illness as its most amazing feature. He had recommended the patient to enter hospital, and agreed that on August 20th he was in the condition described by Dr. Brend. He had never known of a neurotic case showing A. B.'s symptoms, and he thought the patient suffering from insanity which could not have been caused by the accident. In cross-examination Dr. Churchill said that at first he had thought A. B. to be suffering from melancholia—the depressed side of manic-depressive psychosis—or that he was simulating. He stated that he had never seen a neurotic case so irresponsive, and that most neurotics were excitable and suffered from insomnia. But he agreed that the degree of responsiveness might vary and that some neurotics may sleep well.

Dr. J. G. Porter Phillips, physician-superintendent to the Bethlem Royal Hospital, said he had examined A. B. on Nov. 1st and 4th and that he agreed in principle with the evidence of Drs. Brend and Churchill. He had no doubt that A. B. was insane. In cross-examination Dr. Phillips agreed that it was more difficult to be precise in mental illness than in bodily illness, that A. B.'s condition might be caused by an injury, but said that it was most unlikely that these results could have come from the accident. He admitted this was a most unusual case and agreed that there were borderline cases between neurosis and psychosis, but he was emphatic that from his experience it was impossible to say that A. B. was suffering from neurosis—that, in fact, A. B. was certifiably insane.

Counsel addressed the jury, Mr. Justice Avory summed up, and the jury after a short retirement found for the defendants with costs. Judgment was entered accordingly.

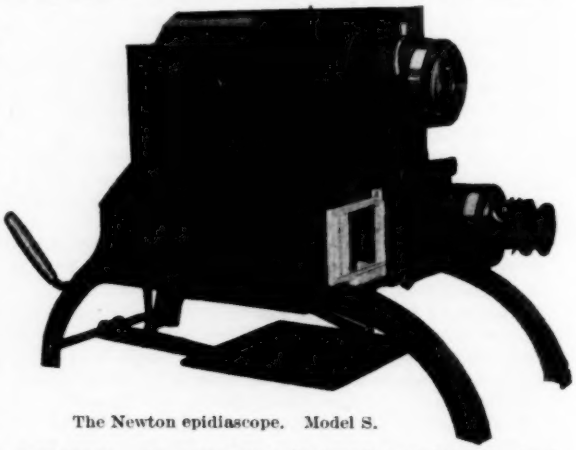
Eviction of Caravan Dwellers

The Stanley Urban District Council in the county of Durham decided to clear a piece of waste ground on which for some years people had been living in caravans. Last October several of these vehicles were removed; one, belonging to Mr. Harrison, an unemployed miner, stuck in the mud and was burnt by the council's officials. Mr. Harrison sued the council last month at the Consett county court for damages for the wilful destruction of his property. He did not challenge the legality of the eviction, but he objected to the method. The council explained to the judge that an attempt was made first to move the van, then to demolish it with crowbars; but the workmen who entered the van found it alive with vermin, and therefore set fire to it to avoid contamination. The judge held that the council's agents had made every reasonable effort to move the vehicle, and that its value was so negligible that it would have been foolish to expose the workmen to the risk of contamination with vermin. He entered judgment for the defendant council.

DONATIONS AND BEQUESTS.—Among other bequests the late Mr. Charles Lane of Birmingham left £1250 to the Queen's Hospital, Birmingham, and to the General Hospital, Birmingham, respectively, for a bed in memory of his mother; £1250 to the General Hospital, Birmingham, for a bed in memory of his brother, Thomas Richard Lane; £1250 to the General Hospital, Birmingham, in recognition of services rendered to his niece, Emily Lane; £500 to the Birmingham Royal Institution for the Blind; and £500 to Dr. Barnardo's Homes.—The late Dr. Charles Dai Hamilton left £19,000 to University College Hospital.—Under the will of the late Mr. J. Honeyman, of Elmwood, Cupar, the Dundee Royal Infirmary will receive £2000.

BRITISH EPIDIASCOPES

FOR the exhibition of pictures to either small or large audiences some method of projection must be used. In spite of the great development of the moving picture, perhaps even because of it, the use of a projector is becoming general. Where a diagram is to be shown or a picture exhibited which needs study and consideration a *moving* picture is not essential or even appropriate, quite apart from the question of its greater cost. If diapositives, commonly known as lantern slides, can be prepared their projection even to very large audiences presents no difficulty, and this is still the best method of demonstration of much of the material which has to be shown to classes of medical students. The preparation of lantern slides is a simple photographic process but it needs some facilities for carrying out such operations. The demand has therefore arisen for apparatus which will project a paper print or an illustration from a book, or any opaque object which must be illuminated from above. It is an obvious convenience if diapositives, photographic or otherwise, can be shown by the same

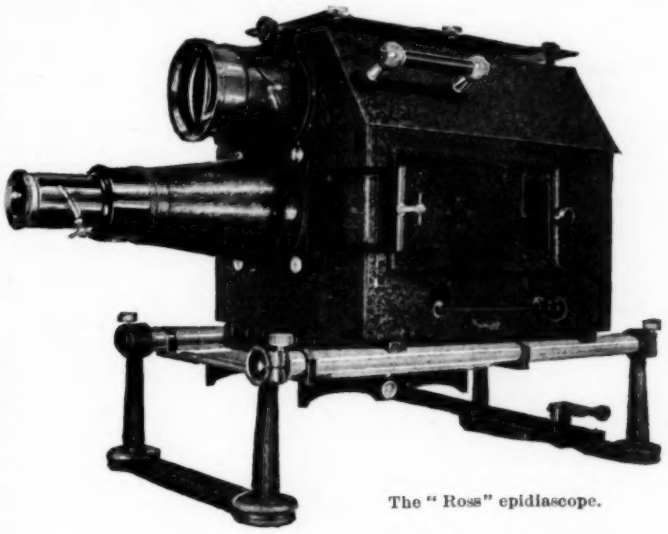


The Newton epidiascope. Model S.

appliance. An apparatus designed to fulfil this dual purpose is called an epidiascope, which in various forms has been made for many years principally by foreign firms, notably by Bausch and Lomb, Leitz, and Zeiss, all of which have turned out good models. English opticians have, however, made considerable efforts to provide apparatus which, both in price and quality, can compete with foreign products. Their enterprise has been stimulated by (1) the protective duties that are now levied on importations of foreign optical products, and even more by (2) the improvements that have taken place in the production of high-power filament electric lamps. This latter point is important as the makers of earlier apparatus were compelled to rely on the electric arc which, in spite of its efficiency, is a difficult method to apply to a relatively simple form of epidiascope, as well as being more difficult for an operator to handle unless he is expert. Nowadays a lecturer wants to be assured that the apparatus supplied will enable an exhibition of a series of pictures taken from different sources to be given without skilled assistance; the operator of the modern epidiascope needs only be able to produce the pictures in the order previously arranged, and to manipulate a switch at a signal from the lecturer.

Three British firms are now producing epidiascopes, Messrs. Charles Baker, of High Holborn, Messrs.

Newton and Co., of Wigmore-street, and Messrs. Ross Ltd., of Clapham Common. Through the courtesy of these firms an opportunity has been provided of testing their machines under normal working conditions. It is not intended to make any critical comparison between them; indeed such comparison would be difficult as each has characteristics which might have an appeal to some users or which would fulfil some particular need. The details of design and construction can be obtained from each maker, but it may be of interest to draw attention to some differences between them.

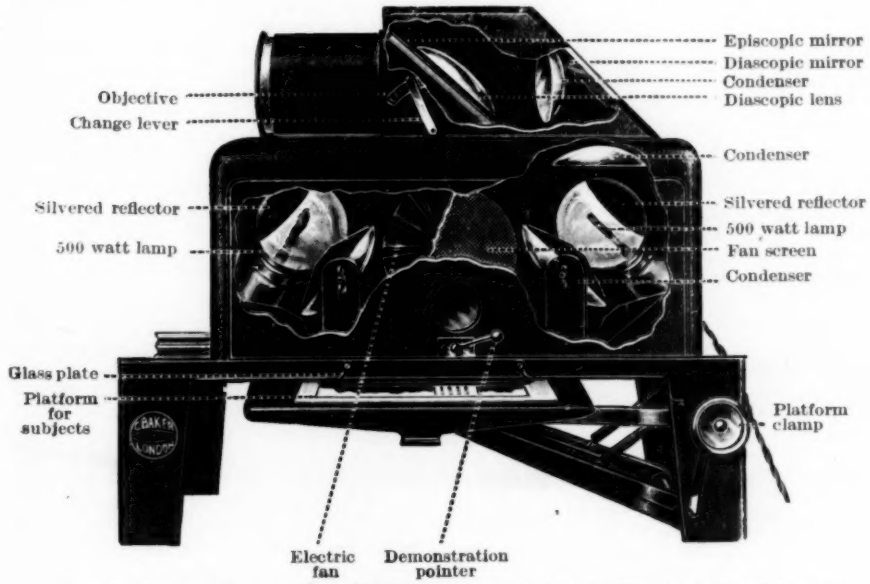


The "Ross" epidiascope.

Messrs. Charles Baker have paid much attention to cooling, and have so designed their apparatus that only one projection lens is needed. The body is a substantial aluminium casting ensuring stability and durability. Two 500-watt lamps are used in silvered bulbs so that illumination is ample for most purposes. Such electric lamps would, however, cause a rise of temperature sufficient to damage delicate objects, and to provide against this Messrs. Baker introduce twin electric fans so disposed that a large amount of cool air continually passes over the object to be exhibited. The efficiency of this mechanism is unquestioned, but it has the inevitable disadvantage that the hum of the fan motor can be heard, a point to which some lecturers might take exception. The movement of only one lever is necessary to change from episcopic to diapositive projection, or vice versa. Any subject up to 6 in. square can be projected, but larger objects or surfaces can be shown by sliding the subject across the supporting stage. The lamps provided are the same voltage as the supply, so that no subsidiary resistance is necessary.

Messrs. Newton and Co. make more than one type of apparatus; the model tested was their "Model S," the least expensive in the list. It is fitted with one 500-watt 100-volt lamp, which therefore requires an external resistance for any higher voltage. Their special diffusion reflectors ensure even illumination over the illuminated surface, and a single cooling fan is provided. Two projection lenses are supplied, one of 16 in. focal length for episcopic, and an achromatic lantern-slide objective for diascopic projection. A single lever movement changes from one form of projection to the other. The provision of two optical systems inevitably increases the cost, but there are definite advantages in such an arrangement.

Messrs. Ross Ltd. have evolved an appliance in which either a 500-watt or 1000-watt lamp are interchangeable, thus providing a means of altering the intensity of illumination to suit either lecture theatres or small class-rooms. These lamps are supplied in the correct voltage, so that no extra resistance is necessary. Two condenser lenses are used to project the light on to reflectors and so on to the object to be shown. No fans are provided for cooling purposes, but the method of ventilation is such that the specimen or diagram is kept reasonably cool by the current of cool air which enters the lower part of the lamp house and is drawn over the exhibit. Optically this apparatus is of a very high order. The lamp house is solidly made, has a somewhat imposing appearance, and should stand hard wear. Whether the method of cooling is efficient enough must depend on individual requirements, but it is only fair to say that the internal temperature was found to be somewhat higher than in fan-cooled instruments. The change over is by a single lever, and if it prove necessary to tilt the instrument to get the image on to the screen a correcting adjustment is provided to maintain critical definition over the whole area.



The "British" epidiascope (Baker) showing parts. Since this illustration was made various improvements have been introduced, notably another fan.

This available range of British-made epidiascopes provides a choice from which it should be possible to select an apparatus suited to any reasonable requirement of high quality and at reasonable price.

CORRESPONDENCE

SODIUM CHLORIDE IN ADDISON'S DISEASE

To the Editor of THE LANCET

SIR,—At the discussion on diseases of the suprarenal gland reported in your last issue, the recent work of Dr. R. F. Loeb and his colleagues was referred to by Prof. Woollard, but its practical application to the treatment of Addison's disease was hardly mentioned. Loeb showed (Science, 1932, lxxvi., 420) that the sodium of the blood was reduced from the normal figure of 140 millemolecules to less than 130 millemolecules in three cases of Addison's disease. Together with Atchley, Benedict, and Lelland he found (Jour. Exper. Med., 1933; lvii., 775) that the same phenomenon existed in dogs whose suprarenal glands had been removed. Loeb, Atchley, Gutman, and Jillson (Proc. Soc. Exp. Biol. and Med., 1933, xxxi., 130) tried the effect of giving sodium chloride to a patient with Addison's disease. The dose given was a large one, 15 g. in the day, but its effect on the patient was most striking as the patient rapidly regained strength and energy, the skin got a little paler and the blood sodium approached normal. When the sodium chloride was withdrawn for 24 hours the patient became seriously ill. These observations have been confirmed by other workers in the United States and Canada, and I have recently been told by Dr. Loeb of one patient whose dose of cortin had been reduced from 10 c.cm. to 2 c.cm. a day, following the giving of 15 g. of sodium chloride.

I have had no experience of this method of treatment, but the results seem so striking that I hope those who are treating patients with Addison's disease will test its value. Even if the sodium chloride cannot replace the whole of the cortin, it may be able to reduce the cost of the treatment very considerably.

I am, Sir, yours faithfully,

GEORGE GRAHAM.

Harley-street, W., Dec. 18th, 1933.

EPIDEMIC VERTIGO

To the Editor of THE LANCET

SIR,—The condition of epidemic vertigo described by Dr. Leyton last week (p. 1392) is of great interest, but is not to be regarded as a separate and distinct disease. Dr. Leyton is right, moreover, in rejecting the idea of it being due to hypoglycæmia. The condition is merely one of the protean manifestations of influenza. Cases may roughly be divided into two groups :—

(1) Those in which the vertigo—usually, but not always, preceded by signs of nasal or pharyngeal catarrh—is the only symptom ; or, in severer cases, is one of a group of cerebral symptoms.

(2) Those in which the vertigo is a symptom ; usually early, occurring in one of the more normal respiratory types of influenza.

The second group, no case of which has come under my notice, was described as far back as 1803. William Falconer, in his account of the influenza epidemic of that year as observed at Bath, states :—

"Vertigo, and that to a considerable degree, was, in some persons, one of the first signs of the disease, and, in several instances, very alarming and distressful. I saw a lady affected to such a degree as not to be able to raise her head from the pillow without losing all sense, and to whom all objects appeared thrice multiplied ; and these uncouth symptoms continued four days in their full extent. I observed in several persons, that where the vertigo was most troublesome, and appeared early in the disease, the peripneumonic symptoms were but slight, and vice versa. Two of the worst cases of the peripneumonic kind that I saw, were not attended with any symptoms of vertigo. Those who were attended with vertigo, even to a less degree than in the case above described, were nevertheless unable to read a letter or a few lines in a book ; and in several a degree of delirium took place during the night, but not, as I saw, to any violent degree." (Quoted in "Annals of Influenza," Sydenham Society, London, 1852, p. 254.)

And he adds : "I have not noticed any bad consequences that seem connected with the vertigo, which, though threatening generally, went off in a few days." (Ibid., p. 261.)

Epidemics of the first group occurred in 1924 and 1925. Cases varied in severity from those in which there was merely intermittent dizziness ; through those in which there was marked vertigo with definite Rombergism ; to those in which the vertigo, nearly always accompanied by severe occipital headache, was so intense that the patients were unable even to sit up in bed. In this last group of severe cases there were disturbances of vision, objects moving about and being seen out of all perspective, distant objects seeming relatively larger than those nearer at hand. These cases also tended to develop later symptoms suggesting mild encephalitis lethargica, with difficulties in reading, lack of concentration, and defects of memory ; all of which sequelæ, however, cleared up with appropriate treatment.

The only physical sign discernible was tenderness over the upper cervical spine and pain on tilting the head back, as opposed to the reverse condition in meningitis. I found that in nearly every case the headache and dizziness, even where it had persisted with severity for days, vanished rapidly when cold was applied to the back of the neck. I used to have a rubber hot-water bottle three-quarters filled with stone cold water and directed the patient to lie on this for half an hour, so that the upper part of the cervical spine and the lower part of the occipital region were in contact with the cold.

In view of the symptomatology and response to treatment I came to the conclusion that the condition was due to a local congestion consequent on a blood-borne infection of the upper part of the cerebellum and the posterior and inner aspects of the occipital lobes of the cerebrum.

I am, Sir, yours faithfully,

Southport, Dec. 16th, 1933. A. N. M. DAVIDSON.

To the Editor of THE LANCET

SIR,—I have read with particular interest the letter in your issue of Dec. 16th under the above caption, having myself for the last three or four weeks fallen a victim to sudden and recurring attacks of vertigo. These attacks, which are not associated with any gastro-intestinal symptoms, are particularly intense on getting out of bed in the morning, but are liable to recur during the day on stooping or on any sudden movement of the head. The urine is normal ; temperature subnormal and blood pressure subnormal. For the last week I have been taking glucose freely, and the attacks during the day have practically ceased.

I am, Sir, yours faithfully,

London, W., Dec. 16th, 1933. "PARK CRESCENT."

CLIMATIC BUBO

To the Editor of THE LANCET

SIR,—In your issue of last week (p. 1365) there appeared an article under the above title by Surg. Lt.-Cdr. E. R. Sorley and Surg.-Cdr. P. L. Gibson. The authors very truly point out that recent researches have advanced our knowledge of climatic bubo (and lymphogranuloma inguinale, the same condition recognised in temperate countries) very considerably. They then proceed to describe the results they have obtained by a particular form of treatment, completely disregarding the axioms which our newer knowledge has taught us.

In evaluating any particular form of treatment of a given condition it is essential that the diagnosis should be first established. The authors have treated 20 cases of "climatic bubo and allied diseases." The allied diseases are chancroid and gonorrhœal infections—conditions which are in no way allied to climatic bubo. For their "criteria" in diagnosis of climatic bubo they rely on statements enunciated nine years ago which do not hold good to-day in view of recent observations. The authors are not aware, apparently, that there is an initial lesion in climatic bubo infections and that double infections with other venereal diseases may be seen. Difficulties were encountered by them in attempting to carry out Freil's test, so that there was no confirmation or otherwise of the diagnosis in their cases.

Of the 20 cases, 8 were chancroid infections with venereal bubo, 4 were cases of gonorrhœa and venereal bubo, and in 8 the clinical diagnosis was climatic bubo. To base any conclusions upon the results obtained in 8 unconfirmed cases of climatic bubo is, I believe, unwarranted, even though those conclusions in regard to shortening of the invalidity period be correct.

The modified method of treatment which the authors put forward as superior to other forms "consists in giving the drug [tartar emetic intravenously] rapidly enough to ensure the production of a reaction"—"a well-marked though transitory reaction." What the reaction consists of is not explained. It would be interesting to know whether this mode of treatment is not in reality a form of shock therapy rather than a treatment by tartar emetic. Without going into detail it may here be stated that while antimony has been found useful by many observers in the treatment of early cases of climatic bubo, some form of shock therapy has found more supporters, as might be expected since the disease is due to an ultramicroscopic virus.

I am, Sir, yours faithfully,

London, W., Dec. 18th, 1933. HUGH S. STANNUS.

IMPACTED MOLAR TEETH

To the Editor of THE LANCET

SIR,—I have observed that the wisdom teeth or their neighbours, owing to slow eruption and ulceration on the surface of the gum, give rise to disturbing pathological changes in the mouth. Necrosis and parotideal abscess of some formidableness with severe rigidity of the jaw may follow. Thereby Stenson's duct becomes affected like an inflamed appendix. Acute toxæmia gives cause for anxiety unless the surgeon recognises the tooth before the jaw is spasmodically fixed.

Among the natives of India, the lascars or sailors, impacted ulcerative crowns produce sometimes severe parotideal inflammatory swellings. On the removal of the offending tooth, with hot fomentations and oral disinfection, the subject recovers. A facial incision to let out pus may be necessary. I have seen several of these cases, it being almost impossible to open their mouths. As the wisdom teeth are often ill-formed it is not difficult to remove them by the proper route. When I was registrar to the Cancer Hospital a case was admitted with cachexia and wasting in which a suspicion of cancer had arisen; but after a piece of dead bone was removed and the mouth cleaned, the patient completely recovered and rigidity disappeared.

If this letter seems unduly long, it is to encourage my professional brethren to reply to Mr. Bowdler Henry's letter in THE LANCET of Nov. 4th (p. 1064), and to support him in a lecture at the Royal College of Surgeons on the above subject. A scientific address from an odontologist should be very enlightening to those who do not recognise the importance of impacted molars in causing disease.

I am, Sir, yours faithfully,

JOHN FRED. BRISCOE.

Authors' Club, Whitehall-court, S.W., Dec. 19th, 1933.

"NOSE CLOSING" RAYS

To the Editor of THE LANCET

SIR,—Mr. A. F. Dufton and Mr. T. Bedford, to whose experiments you alluded last week (p. 1385), have not chosen to visit my laboratory or use my methods of research. I found that in those with a restricted nasal air-way increased obstruction and actual closing of one or even of both nostrils may be brought about by exposure to certain sources of infra-red rays. The effect of the rays on wide-nosed people can only be evidenced by first restricting their nasal air-way by means of a screw nose-clip applied to the wings of the nostrils. Dufton and Bedford have inserted a tube in one nostril and connected this with an aneroid recording tambour, leaving the other nostril open for breathing through. Now the opening of one nostril in wide-nosed people is much larger than is needed for the quiet breathing which pertains in the resting position, and it is easy to show with the help of a water manometer that the air-way of the one open nostril can be greatly diminished without significantly altering the small negative pressure produced by inspiration. The method used by Dufton and Bedford can then only give results in those who have the one open nostril greatly restricted.

My critics do not appear to have worked out the energy distribution of the sources of heat used by them or to have consulted the paper read by me at the 2nd Light Congress, Copenhagen, 1932 (Quart. Jour. Exper. Physiol., 1933, xxiii., 35). In this paper are given the energy distributions as worked out by my physicist colleague, Dr. H. J. Taylor. To test my claim that a bright source acts as a "nose opener" and a dull source as a "nose closer," Dufton and Bedford have chosen to use two electric fires, one bright and the other dull, but both were backed by reflectors, and the fires were placed so that the full effect of the reflectors fell upon the subject's face, as shown by the illustration in their paper. Now the reflectors give off infra-red rays which suffice to neutralise any difference of brightness. Both these fires are "nose closers" to those with a restricted nose-way. Their experiments therefore do not refute my observations. There are many other points in their paper which can be dealt with in a paper which I am reading to the Institution

of Heating and Ventilating Engineers on Feb. 14th next, when the subject can be fully debated.

Meanwhile here is a simple experiment which anyone can try. The effect of a small bowl electric heater (the reflector can be removed) on the skin of the face can be compared with that of a 250-watt incandescent lamp. This should be screened by a sheet of glass to cut off the rays given off by the hot surface of the lamp. The lamp, so screened, when approached very close to the face produces a pleasant sensation of warmth, while in those with a restricted air-way the nose will be wide open. The heater, on the other hand, on a less near approach to the face gives a less pleasant and oppressive sensation of heat and closing of the nose in sensitive people. Be it noted the irradiating energy of the lamp held close to the face is greater than that of the heater. This is a proof of my contention that the quality of the rays coming from a source is important.

I am, Sir, yours faithfully,

Dec. 14th, 1933. LEONARD HILL.

THE TRANSITORY CORTEX OF THE SUPRARENAL

To the Editor of THE LANCET

SIR,—According to a report published in your last issue (p. 1372), Prof. H. H. Woollard stated that the "transient cortex" of the suprarenal "is peculiar to man and the apes." The mouse, however, enjoys the same distinction. The transitory cortex of the mouse suprarenal was discovered by Masui and Tamura (Jap. Jour. Zootech. Sci., 1924, i., 55), and the most detailed studies are those of Miller (Amer. Jour. Anat., 1927, xl., 251), Deanesly (Proc. Roy. Soc., B, 1928, ciii., 523), and Whitehead (Jour. Anat., 1933, lxvii., 387). The transitory cortex of the mouse suprarenal has often been regarded as abnormal. I hope soon to review the whole of the literature. According to Pennacchietti (Arch. ital. anat. embriol., 1929, xxvi., 528) a transitory cortex is present in the suprarenals of the guinea-pig and rat. Confirmatory studies are in progress in this department.

I am, Sir, yours faithfully,

RAYMOND WHITEHEAD.

Department of Pathology, University of Manchester, Dec. 16th, 1933.

WARD AND DORMITORY INFECTIONS

To the Editor of THE LANCET

SIR,—May I make a few remarks on the most interesting discussion reported in THE LANCET of Dec. 9th (pp. 1306 and 1317). In the first place the necessity for ample floor space seems to be regarded as a somewhat novel idea. But as a matter of fact the question was one which occupied the attention of the medical superintendents of the M.A.B. fever hospitals 40 years ago, and my friend and colleague, the late Dr. Foord Caiger, was one of the most prominent in insisting upon the necessity, as his reports to the Board show—reports which, I fear, did not get far beyond the Board. The managers of the M.A.B. backed up their superintendents, and in most of their hospitals the requirements of the Local Government Board were adhered to. On one occasion in 1894 Sir Joseph Lister (as he then was) visited the Eastern Hospital at Homerton in order to see some patients who were undergoing the then new serum treatment for diphtheria, and I shall never forget his look of surprise and his exclamation when he entered the first ward to which I took him: "Dear me, what a *lot* of space you have round your beds!"

There are other factors to be taken into consideration besides the reduction in floor space. When in times of emergency extra beds are placed in wards, it is very rarely that additional nursing staff is also provided. Consequently the same number of nurses must attend to a larger number of patients and aseptic precautions run the risk of not being thoroughly carried out. You may shut up your patients in chambers which are completely separated from one another and yet infection will spread if you do not employ a sufficient number of nurses, as I showed in the case of an isolation ward at the Eastern Hospital many years ago. Moreover, in discussing infection in the dormitory we must not overlook conditions favourable to the spread of infection outside it. Many years ago I visited a public school in which an outbreak of diphtheria had occurred in a certain house. No fault could be found with the dormitories, but when I inquired as to what was taking place outside, I found that the boys were allowed to crowd together into one another's studies of an evening, 15 to 16 boys in a study meant for one or two, their heads all close together as they pored over and discussed some interesting book or other object on the table.

One word on the infectivity of the group of infectious bowel disease (enteric, dysentery). That in these diseases infection can spread more or less directly from person to person appears now, I am glad to say, to be generally admitted. But it does not seem long since the very idea was treated with scorn, owing perhaps to the teaching of Murchison. My predecessor at the Eastern Hospital, Dr. A. Collie, was in his day almost alone in holding the present view. But I had more trouble in preventing the staff who were attending to the typhoid patients from catching the disease than in preventing its infection from spreading to patients suffering from other affections.

I am, Sir, yours faithfully,

Hampstead, Dec. 17th, 1933. E. W. GOODALL.

THE CAREY COOMBS MEMORIAL

To the Editor of THE LANCET

SIR,—The fund which you kindly announced earlier in the year (THE LANCET, July 15th, p. 156) is now approaching £1300. As the committee are anxious to invest the money, any still wishing to subscribe are requested to send their subscriptions to me at 13, Lansdown-place, Clifton, Bristol, 8, at their earliest convenience.

I am, Sir, yours faithfully,

H. ELWIN HARRIS, Jun.,

Dec. 13th, 1933. Hon. Sec., Carey Coombs Memorial Fund.

EVIDENCE OF BLOOD-GROUPS

To the Editor of THE LANCET

SIR,—In THE LANCET of Dec. 9th (p. 1338) you refer to the case of Rex *v.* Loughnan, and mention my evidence dealing with the blood-groups. You say, very rightly, that as the prisoner cannot be compelled to submit to a blood test, such evidence must be of necessity inconclusive. I should like to point out that in the interests of justice there is a more important aspect of the matter. If it is established by test that the blood on the clothing of the accused belongs to a different group to that of the deceased then, so far as this part of the evidence is concerned, the accused is absolutely absolved.

I am, Sir, yours faithfully,

G. ROCHE LYNCH.

Department of Chemical Pathology, St. Mary's Hospital, Paddington, W., Dec. 15th, 1933.

WHAT IS "ART PAPER"?

To the Editor of THE LANCET

SIR,—I am indebted to "One of Them" for drawing my attention to the statement I made in your issue of Nov. 11th that my recent Life of Lettsom was printed on "art paper." This was an error on my part. I should have written: "imitation art paper." This may not appear, at first sight, very different; but the difference in fact is so great that possibly it may be useful to producers of books, and especially medical authors, if I summarise an explanatory letter I have received from the makers of the paper on which the book is really printed.

From this it appears that paper can be made from rag, mechanical wood-pulp, chemical wood-pulp, soda-pulp, and esparto, or any combination of esparto and wood-pulp. The best hand-made paper is made from rag. Newsprint is almost entirely mechanical wood-pulp with a small percentage of chemical. Many books are printed on paper made from pure chemical wood-pulp. This is quite a satisfactory paper for most purposes apart from illustrations. But, where fine reproduction in half-tone or colour is required, "real art paper" is necessary. This paper has, as its body, a mixture of wood-pulp and esparto with china clay, and has a coating on the surface of blancfixe, satin-white, or china clay. It is not sufficiently hard wearing, as your correspondent points out, for book production. Many publishers, however, use it for plate illustrations in books, employing at the same time chemical wood-pulp paper for the letterpress; but in so doing they cannot intersperse the illustrations in the text.

According to the paper-makers, a pure chemical wood-pulp paper is not anything like as lasting as one made from 80 per cent. esparto and 20 per cent. chemical. This percentage would appear to provide the ideal paper for book production, as it can be made with a super-calendered finish so as to take half-tone blocks as well as letterpress. It is ideal, therefore, for the production of medical text-books and works of reference where illustrations are required next the subject matter. And it is the paper on which "Lettsom" is printed.

I am, Sir, yours faithfully,

J. JOHNSTON ABRAHAM.

Queen Anne-street, W., Dec. 16th, 1933.

VIENNA

(FROM OUR OWN CORRESPONDENT)

TUBERCULOSIS WELFARE CENTRES

THE official report, issued by the Ministry of Health, on the work done during 1932 by the tuberculosis welfare centres in Austria has recently been published. There are at present 94 such centres in the Republic: 31 work in towns, 8 in industrial districts, 13 in rural districts, and 42 in mixed districts. The staff employed includes 155 medical men, 99 qualified nurses, and 74 assistant nurses, besides 64 lay helpers. The number of new patients examined and cared for in 1932 was 36,332 (44 per cent. males, 56 per cent. females). Of these, 2693, or 7·5 per cent., were seriously ill (57 per cent. males, 43 per cent. females); 15,080, or 41 per cent. of the total, were insured against illness. All the centres together dealt with no less than 301,510 patients in 1932, of whom 164,072 were under constant supervision. Of these, 11,861, or 7·2 per cent., had open tuberculosis. In other words, in each 10,000 of the population there were 28 persons with manifest disease. It is interesting to note that during the year 1581 severe cases were notified to the centres as a consequence of the "Notifiable Diseases Act," which makes open tuberculosis notifiable in Austria. Of the total number of newly notified persons 24·5 per cent. were children. The searching examination of 2021 families revealed 241 (26 per cent.) of new serious cases which had hitherto escaped notification. The medical men attached to the centres made 191,164 complete examinations, out of which 154,376 were control examinations and 36,778 were first examinations, including sputum, X rays, and biological tests.

The work of the centres includes also the investigation of the housing conditions. Out of 20,593 lodgings, 80 per cent. could be regarded as not overcrowded, i.e., they were inhabited by not more than two persons per habitable room. Among 2977 lodgings of seriously diseased persons, 84 per cent. were not overcrowded. As regards sleeping conditions, only 14 per cent. of all diseased persons under observation had separate bedrooms; 86 per cent. share their bedroom with others; rather more than half of these with two or more companions. In many cases (23 per cent.) the diseased person shared a bed itself with other (one or more) persons, often (17 per cent.) with children. It is a satisfactory feature that since 1926, when the welfare centres began work on a large scale, the housing conditions show a marked decrease in overcrowding. It has been effectively combated by removal of the patients from the lodging, by removal of the endangered children, or by rearrangement of accommodation. In 10 per cent. of cases the obduracy of the parties concerned nullified all attempts at amelioration of housing conditions.

The report points out that the scope of the centres, as well as the amount of work done by the staff, is constantly increasing, especially the number of entire families examined. The mortality from tuberculosis is said to be dropping slowly but consistently. The morbidity, however, seems to be rising, especially that from open tuberculosis; this rise may be due to the poor earning capacity even of those who are in work, as well as to malnutrition arising from unemployment.

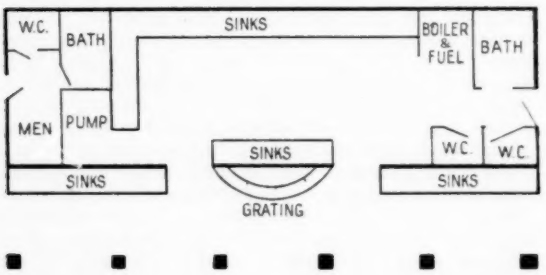
NEW WORK ON HÆMOGLOBIN

At a recent meeting of the Vienna Biological Society Prof. Haurowitz, of the University of Prague, delivered a lecture on the subject he has made his own—the chemistry of hæmoglobin and its derivatives, including its biological properties. He pointed out that the exact chemical constitution of the colouring matter of the blood is now known and it can be manufactured artificially. Each species of animal has its own colouring matter, and in human beings there exists a marked difference between the hæmoglobin of the adult and that of the new-born. The latter is very resistant to lack of oxygen, a fact which, he said, explains why in cases of gas poisoning adults may be found dead, whereas an infant found in the same room is still alive. Research now being undertaken with regard to changes in the percentage and constitution of hæmoglobin in various pathological conditions of the blood are expected by Prof. Haurowitz to have a profound bearing on therapeutics.

WATER FOR THE VILLAGE

THE accompanying sketch and plan show the village water-house to which Mr. J. H. Coste referred in the Chadwick lecture, reported in our issue of Dec. 9th (p. 1354). In that lecture he pointed out that a piped water-supply to individual houses cannot be available in many districts for some years to come, but in every village there ought to be a public supply if only in the form of a stand tap, well, or pump.

This public supply might be placed in a water-house—or, as Mr. Coste calls it, hydrarium—with a public fountain, a lavabo for domestic washing (such as one sees on the continent) and baths. The one illustrated has outdoor and indoor sinks for



domestic washing, a room in the main hall for ironing tables and mangles or wringers, and lavatory and bathing accommodation for both sexes. A central bowed projection, which may be treated ornamentally, has drinking fountains and taps for filling pails for water to take home. Water can be stored in an overhead tank, and if this is done the structure must of course be strong enough to bear its weight. To prevent freezing the flue from the boiler can be carried (in winter) under the tank. Alternatively, the tank may be underground. Mr. Coste suggests that chlorinating arrangements should be near the pump; or access to the tank may be by a ladder to the roof or by a manhole to an underground tank. Where water is scarce, waste water may be used for flushing. A small septic tank and a clinker-bed sewage installation deals with sewage. A drying green may be arranged around or at one or more of the sides of the building, which must, of course, be put near a suitable source of water.

Mr. Coste's proposals are of special interest at a time when the water-supplies of many villages have failed. Apart from the other amenities indicated, a single source of water, efficiently managed, would be more reliable than the shallow private wells in general use, and the arrangements for baths should be welcome. The erection of such a water-house might well be considered by anyone who is trying to improve conditions in the countryside.

The village water-house.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 9TH, 1933

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 9 (last week 3); scarlet fever, 3966; diphtheria, 1403; enteric fever, 29; acute pneumonia (primary or influenzal), 1143; puerperal fever, 28; puerperal pyrexia, 95; cerebro-spinal fever, 16; acute poliomyelitis, 12; encephalitis lethargica, 9; dysentery, 21; ophthalmia neonatorum, 56. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 12th–13th was as follows: Small-pox, 14 under treatment (last week 11 and 2 under observation); scarlet fever, 3101; diphtheria, 2154; enteric fever, 6; measles, 530; whooping-cough, 187; puerperal fever, 12 mothers (plus 2 babies); encephalitis lethargica, 256; poliomyelitis, 6; "other diseases," 230. At St. Margaret's Hospital there were 12 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 28 (4) from measles, 14 (1) from scarlet fever, 26 (5) from whooping-cough, 68 (16) from diphtheria, 41 (12) from diarrhœa and enteritis under two years, and 70 (13) from influenza. The figures in parentheses are those for London itself.

Grimsby reported the only death from enteric fever. Manchester reported 5 deaths from measles, Stockton-on-Tees 4. Three fatal cases of scarlet fever were reported from Huddersfield. Of the fatal cases of diphtheria 4 occurred at Dagenham, West Ham, Leeds, Liverpool, and Merthyr Tydfil, and 3 at Birmingham. Five deaths were attributed to influenza at Stoke-on-Trent, and 3 deaths at Liverpool, Manchester, Birmingham, Bristol, and Swansea.

The number of stillbirths notified during the week was 255 (corresponding to a rate of 47 per 1000 total births), including 36 in London.

FOOD POISONING AT BIRMINGHAM.—On Dec. 6th about 180 persons took supper at a Birmingham hotel, the menu being grape-fruit cocktail, soup, fish, turkey, iced pudding and coffee, sausages, potatoes, and French beans being served with the turkey. More than 100 of them suffered next day from vomiting and pyrexia of varying severity. Investigation by the public health department of articles of diet taken by various guests suggests that one particular article of food was responsible for the digestive disturbance, but the results of bacteriological examination are not yet available. Materials derived from one patient indicated infection by a common food-poisoning micro-organism.

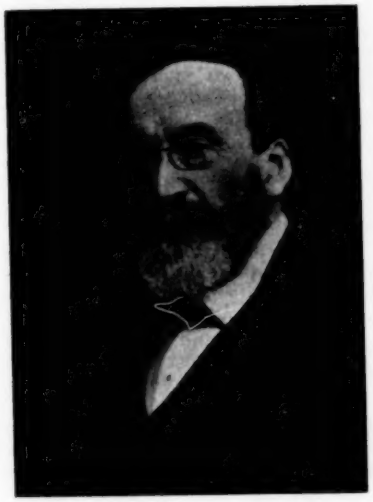
OBITUARY

SIR WILLIAM WHITLA, M.D. Q.U.I., LL.D.

EMERITUS PROFESSOR, QUEEN'S UNIVERSITY OF BELFAST

WE announced last week the death of Sir William Whitla, who had for so long a period filled very high positions in the medical and social world. The event occurred on Monday, Dec. 11th, at his house in Belfast. He was 82 years of age.

William Whitla, the son of Mr. Robert Whitla of Monaghan, was born in that town in 1851. Shortly after leaving school he was apprenticed to a large firm of dispensing chemists in Belfast, a fact which was to influence his whole future. On the termination of his articles he entered Queen's College, Belfast, where he had a brilliant career as a student. Qualifying in 1873, and proceeding to the M.D. degree in 1877, he graduated with the highest honours, receiving special commendation and the gold medal. He was appointed soon afterwards resident medical officer and superintendent of the Royal Victoria Hospital, when his exceptional ability, both as physician and administrator, became evident; he practically revolutionised the work of the institution. At the end of his term of office he commenced practice in Belfast, when his success was instantaneous. He was invited by the professor of surgery to assist him at private operations—for at that time his bent was chiefly surgical—but he soon perceived that his future lay in medicine. He rapidly developed an extensive practice, and in a few years, both in the city and the surrounding district, his professional connexions became very extensive. In his early days of practice he was a tireless worker, and when called to see a case he came and went so swiftly that many people thought that he never left his house—a tribute to his energy in days of slow transport. Before the age of 30 he was physician to the Royal Victoria Hospital, while he was also elected as physician to the Belfast Ophthalmic Hospital and to the Belfast Hospital for Women and Children. His association with the University of Belfast was from the beginning very close, from the time when under the original corporation it was known as Queen's College, until the day of his death. He was a member of the senate in 1886, he was an examiner in medicine at the University in the following year, and rapidly became a marked man as clinical physician and educational authority. With his appointment as professor of materia medica new life was breathed into the teaching of a dry and difficult subject.



SIR WILLIAM WHITLA

[*Photograph by Elliott & Fry*

His famous work, the Elements of Pharmacy, Materia Medica, and Therapeutics, made its first appearance in 1882. In this, within a remarkably moderate compass, he managed to make into one broad road, easy for the travel of the student, the three avenues representing existing knowledge of the subjects. The work was at once recognised as an important compendium, valuable alike to practitioners, dispensing chemists, and medical students. It has passed through 12 editions, and has become one of that select group, a classic. In 1891 there appeared his well-known Dictionary of Treatment. This work, too, was to achieve the distinction of many consecutive issues, being published also in America, while an edition appeared later in Chinese. The volumes were steadily kept up to date by the author for a long period, but went out of print some 25 years ago. The interval, however, was well employed, for in 1912 the fifth edition was issued, requiring considerable changes and additions to reflect rapid scientific progress. At this date in nearly every department of therapeutics the work was rewritten, and it could be regarded practically as a new book although possessing the leading characteristics of the former editions. The articles dealing with the therapeutics of gynæcology and obstetrics were now taken over in excellent manner by Prof. R. J. Johnstone, of the Belfast Maternity Hospital and Whitla's colleague at the Royal Victoria Hospital. In the new shape well-earned popularity was achieved by the issue of six or seven more editions. Prof. W. W. D. Thomson, in a memorial note which follows below, gives dramatic information as to the resuscitation of the work. In 1908 appeared the Manual of the Practice and Theory of Medicine in two volumes, the aim of the work being "to afford a busy practitioner in the most convenient and condensed form a series of independent articles upon the different diseases which fall under the province of the physician." The dictionary form of the work on treatment necessitated, in the manual dealing with the practice and theory, a certain amount of repetition, for the new work was obviously an introduction to its predecessors. It was immediately recognised as a valuable source of reference, and as completing a remarkable survey of accepted professional knowledge.

To return to Whitla's professional life. In 1887 he was called on to preside over the section of therapeutics at the meeting of the British Medical Association at Dublin, and at the International Congress of Medicine, held in Rome seven years later, he was the honorary president, representing this country, of the therapeutic section of the Congress. While conducting his duties as professor of materia medica and therapeutics, which he had held since 1890, he became president of the British Medical Association in 1909 when the meeting was held in Belfast, and was at different times president of the Irish Medical Schools and Graduates Association, of the Irish Medical Association, and of the Ulster Medical Society, while in 1910 he was elected to the General Medical Council as the representative of Queen's University, Belfast. At the deliberations of the Council he possessed the advantage, when educational matters were in question, of having been an examiner over a considerable range of years at four universities and at the Pharmaceutical Society of Ireland. He sat on the Council for six years during which time his advice, not only in the special branches of medicine which he had made his own, but upon all matters of training and discipline, was recognised as valuable. He kept his large range of information so clearly before him that it was

always accessible. This was well displayed in the annual oration of the Medical Society of London delivered in 1913, in which he analysed the trend of thought in pharmacological research at a time of remarkable activity in the attempts to bring chemical and physiological knowledge to bear upon therapeutic action. He surveyed the whole realm of therapeutics practically up to the date of the delivery of the oration, pointing to the progress which already had been made while indicating the lines which that progress would probably follow.

In 1918 he became Member of Parliament for his University and in that assembly he sustained his reputation for wisdom and shrewdness. He took little active part in public affairs, but he was a colleague to whom other Members were glad to refer for advice. In his occasional interventions in debate he spoke clearly and to the point, both knowing his subject and what he wished to say on it. He also enjoyed personal popularity in the House. Honours and academic distinctions, as might be expected, flowed in on him. In 1902 he was knighted and was appointed hon. physician in Ireland to the King; he received honorary degrees from his own University, from the Universities of Glasgow and Dublin, from the Academia Fisico Chimica Italiano, and the University of Palermo.

Sir William Whitla married in 1876 Ada, daughter of Mr. George Bourne, of The Draconage, Stafford. She died recently and there were no children of the marriage. Sir William's brother, Dr. Meredith Whitla, still practises in Monaghan.

Prof. T. Sinclair, F.R.C.S., M.P. for Queen's University, and Emeritus Professor of Surgery writes as follows: "Other colleagues and pupils will no doubt testify to the many social, professional, and academic qualities of the late Sir William Whitla. I shall therefore confine myself to a brief account of his services as a Parliamentary representative of the University for five years—an office in which I had the honour to succeed him. Sir William had an impressive personality, a penetrating and far-seeing intellect. His entry into any company excited immediate interest and attention, and gave his opinion, when expressed in his earnest and thoughtful manner, much weight. In the Great Convention of Ireland (1917–1918), summoned to arrange details of the Home Rule scheme, his intervention helped to secure for the rights and privileges of his native Ulster due consideration, as well as for those of his Alma Mater which he loved so well. When, in 1908, the Irish Universities Act was drafted, abolishing the old Royal University of Ireland at the very zenith of its fame, and substituting the National University in Dublin and the Queen's University in Belfast, his watchfulness and sagacity were invaluable. At that time the late Mr. Augustine Birrell was Chief Secretary for Ireland, and could not be convinced of the extreme gravity of the change. Sir William endeavoured to get him to treat the matters that seemed so vital to us seriously. The deplorable results in the State of Ireland of partition we witness to-day, but Northern Ireland has endeavoured to make the best of its Queen's University. We are proud to think that success has attended our efforts. Queen's owes much to its distinguished alumnus, Sir William Whitla, who became one of her pro-chancellors and who, on passing from amongst us, has bequeathed his handsome residence and demesne as a residence for its vice-chancellors for all time. Truly a lasting memorial to one who has added prestige and distinction to his old university and native province, as well by his talents as by his munificent gifts."

Colonel A. B. Mitchell, D.L., F.R.C.S.I., Consulting Surgeon, Royal Victoria Hospital, writes: "It is doubtful if any medical man ever gained and maintained the confidence, trust, and affection of his patients in a higher degree than William Whitla. And when, in the midst of hospital work and exacting practice, he wrote his Materia Medica and Therapeutics, the value of his early training as a chemist was very evident. It was the first text-book to reproduce woodcuts of pestles and mortar, measure glasses, and other dispenser's tools. The book met the requirements of the dispensing chemist, the medical student, and the qualified medical man. The section on non-official remedies proved a special attraction. The book had an enormous sale. The twelfth edition, revised and edited by Dr. Gunn, of Oxford, happily reached Sir William about two months before his death. He displayed it to his friends with natural pride. An indefatigable worker, he next set out to write that remarkable book The Dictionary of Treatment. His versatility and the extent of his reading may be gauged from the fact that every article in the first edition was written by himself. The success of this work was immense. It was published simultaneously in England and America. The English edition of 8000 copies was sold out within nine months; 2000 copies of the American edition were imported into this country to meet the immediate demand. The book met a definite want and was soon to be found on the bookshelf of almost every general practitioner. A specially bound volume of the Chinese edition was amongst his most treasured possessions. Apart from his medical knowledge Sir William Whitla was a widely read and cultured man. His knowledge of English literature was amazing. He was one of the greatest living Shakespearian scholars. The annual visits of Sir Frank Benson and his company to Belfast were almost red letter days to him. Those who were privileged to participate in the delightful suppers which he gave to the leading members of that company can never forget the charming atmosphere of that hospitable table. Members of the British Medical Association will long remember his presidency on the occasion of the annual meeting in Belfast in 1909. His bounteous hospitality, brilliant garden party, and a presentation to each member who attended the meeting of his recently published book, a Dictionary of Medicine, are not easily forgotten. The Medical Institute, the home of the Ulster Medical Society, contains a bronze plate with the following inscription: 'This building was erected, equipped and presented to the Ulster Medical Society by Sir William Whitla, M.D.' The building was declared open in 1902; the cost had exceeded £6000, and when one tried to thank Whitla he replied: 'I owe it to the profession, they gave me the money for my book.'

"Sir William Whitla was a really great man with a strikingly picturesque mind. He was a wonderful raconteur, his stories were innumerable, and were recorded with a wealth of detail that made him a unique and fascinating companion. On the difficult problems connected with education he was a recognised authority and was an early advocate of the establishment of a University at Belfast. It was a fitting tribute that he should have been elected first representative of the Queen's University of Belfast in the Imperial Parliament and one of its pro-chancellors. He was a widely travelled man and his descriptions

of Russia, Palestine, Italy, Canada, and America were an educational treat.

"A man of deep religious conviction, his Bible was his constant companion. The tale of his private benefactions will never be known, but no one in real distress ever applied to him in vain. For almost four years he had been unable to leave his room, but his mental powers and his memory remained almost perfect to the last. His devoted wife, Ada, Lady Whitla, predeceased him by 18 months. A great man, a very great man, has gone to his long rest; a rest which he earnestly desired and for which he patiently waited. He has not lived in vain."

Dr. W. W. D. Thomson, Professor of Medicine, Queen's University, Belfast, writes: "Fifty-two years ago William Whitla's name became well known to students of medicine through the publication of his Elements of Pharmacy, Materia Medica and Therapeutics, but the publication of the Dictionary of Treatment ten years later, in 1891, made his name a household one among medical practitioners, not only in the British Isles, but also in the colonies and United States. This book seemed exactly to meet the needs of the man in practice, who was enabled quickly to turn up the disease in question and find there well-tried methods of treatment and also carefully compiled prescriptions. At that period the therapeutic indices, the appointment books, &c., of the various drug houses had not come into common use, with their inviting array of proprietary mixtures and tablets; prescription writing was still an art which took long to acquire. To the younger men this book was a welcome assistant in their practice, and it rapidly became a 'best seller.' The writing of this book was begun during a period of comparative leisure, and some 500 pages were completed when increasing pressure of work forced its temporary abandonment. When a fresh opportunity arose, Whitla was discontented with what he had previously written and ordered his man to have the manuscript burnt. The furnace was out of action that day, however, and the manuscript put on a shelf and forgotten. It was not till some time later that the work, which had so nearly perished, was resumed and finished. At this period Whitla often worked 18 hours a day for long spells.

"As a lecturer and clinical teacher Sir William Whitla excelled by his skill of dramatic narrative, and drove home his points with some apt illustrations culled from his own vast clinical experience. As a clinician he had an uncanny knack, reminiscent of Sherlock Holmes, of fastening on some clue on which to build a diagnosis. His powers of observation taught many generations of medical students the value of close inspection in clinical work. He was a fierce opponent of narrow specialism, and he ever emphasised the close correlation of all the organs of the body when studying disease.

"His interests led him into other fields as well as medicine. Notable among these was his deep religious faith and interest in theology. He was a personal friend of the late General Booth, who stayed with him on his visits to Ulster. He interested himself in the subject of Biblical Prophecy. His last published work dealt with the Book of Daniel. I visited him on two occasions a month before his death. He sat in an armchair surrounded with books, and on the reading table before him an open volume of the Bible. The room, furnished as a study, looked out on a lawn, and on this Sir William fixed his gaze as he talked of bygone things. He had not been out of this room for four years, indeed he could scarcely move without assistance; and yet his brain was as alert as it had ever been, and he showed no signs of weakening or vexation at his afflictions. There is no doubt that he felt the loss of Lady Whitla, who died in April, 1932, very keenly."

IRVING HEWARD CAMERON, F.R.C.S. Eng., Edin., Irel.

EMERITUS PROFESSOR OF SURGERY, TORONTO UNIVERSITY

WE regret to learn of the death in Toronto of Prof. Irving Cameron, a veteran surgeon whose reputation had spread far from his Canadian home.

Irving Heward Cameron was the son of Sir Matthew Cameron, a former Chief Justice of Ontario; his mother was a Kentish woman, and his father a member of the Lochiel family. Irving Cameron was educated at Upper Canada College and the University of Toronto, and from the beginning of his professional career took a prominent part both in the clinical and scientific sides of his profession. He early became assistant to the professor of surgery in the University, and succeeded to the chair while still a young man. He became prominent in the organisation of the Canadian Medical Association and in the local branch of the British Medical Association, serving as president to both bodies. He contributed to many medical publications, and was one of the founders of the *Canadian Journal of Medical Science* which he afterwards edited, and in which he wrote largely on general surgical topics, and especially on the surgery of tuberculosis. He became one of the best known Canadian figures at international gatherings, for he was a fluent and pertinent speaker, widely informed along many professional lines. His reputation was acknowledged by his election in 1900 as hon. F.R.C.S. England, while he became also an honorary Fellow of the Edinburgh and Irish Colleges of Surgeons, and of the American College of Surgeons. From the University of Edinburgh he received the LL.D.

Prof. Irving Cameron was twice married, his first wife being Elizabeth, daughter of Dr. H. H. Wright, and his second wife the widow of John Ross Robertson, the well-known Toronto journalist and philanthropist.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt.-Comdr. (D.) P. G. Richards is placed on the retd. list with rank of Surg. Comdr. (D).

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. T. A. Brand to be Surg. Lt.-Comdr.

Surg. Lt. (D) F. D. Manners to be Surg. Lt.-Comdr. (D).

ROYAL ARMY MEDICAL CORPS

Lt. (temp. commn.) P. O'Shea to be Lt. (on prob.).

ARMY RESERVE OF OFFICERS

Lt.-Col. P. G. Easton, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

Capt. J. R. Griffiths resigns his commn. and retains his rank, with permission to wear the prescribed uniform.

Lts. H. V. Ingram and T. F. Arnott to be Capts.

Lt. G. D. Kersley, from T.A. Res. of Off. (R.A.M.C.), to be Lt.

BERNHARD BARON TRUST.—Grants to hospitals and charities aggregating £37,000 have been made from the trust created by the late Mr. Bernhard Baron. London hospitals have received £15,700, and provincial hospitals £7465. The total sum that has been distributed now reaches £221,900.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Unemployment Bill

IN the House of Commons on Dec. 15th the amended financial resolution in connexion with the Unemployment Bill giving effect to the Government's concession in respect of the relief given to distressed areas was agreed to in Committee by 184 votes to 35.

Road Traffic (Emergency Treatment) Bill

In the Committee stage of this Bill in the House of Lords on Dec. 14th Lord SANDHURST moved an amendment to extend its provisions to all vehicles, whether motor or not. Lord MOYNIHAN said it was generally recognised that before the advent of the motor vehicle accidents on the roads were few in number, scattered, and comparatively trivial. Accidents were now frequent, a large mortality resulted from them, and they were very often concentrated in certain districts to such an extent as to give rise to resentment on the part of the medical profession at the unfairness of receiving no remuneration. The amendment was negatived by 38 votes to 4. — Earl HOWE moved an amendment to substitute the vehicle licensing authority for the owner of the motor-car as the party from whom medical practitioners and hospitals should be entitled to recover remuneration for emergency treatment. The roads were used by the whole community and the burden of this charge ought to be borne by the whole community.—Lord PONSONBY agreed that the injustice to the motorist would be removed if the grant were made from the Exchequer.—Lord MOYNIHAN said that if the money were raised from compulsory insurance the amount required from each individual motorist would amount to only a penny per month—no hardship on anyone now using the road.—The Earl of PLYMOUTH said the Government were considering the whole question of road accidents and the subject matter of this Bill would be included in that review. He could not express a preference for one form of remedy over another. The amendment was withdrawn.—Lord MOYNIHAN moved an amendment providing that applications should be made only in cases where full payment for treatment rendered had not previously been received. This was agreed to.

In the House of Lords on Tuesday, Dec. 19th, the Road Traffic (Emergency Treatment) Bill was read the third time and passed.

HOUSE OF COMMONS

WEDNESDAY, DEC. 13TH

Jewish Doctors in Palestine

Mr. WEDGWOOD asked the Secretary of State for the Colonies whether his attention had been drawn to the fact that the Palestine Government was considering a restriction on the number of Jews who might become doctors in Palestine; and if this restriction had received the approval of His Majesty's Government.—Sir P. CUNLIFFE-LISTER replied: I have not received any information from the Government of Palestine that such a restriction is contemplated.

Alleged Wrongful Removal to Mental Hospital

Sir WILLIAM DAVISON asked the Minister of Health whether his attention had been called to the forcible removal to a lunatic asylum of a sane woman from her home in Bedford Park, West London, by servants of the Middlesex County Council, who refused to verify her statement that her name was not that of the person they stated they had been ordered to remove; and whether he would set up a committee to inquire into the whole question of the removal and detention of persons alleged to be insane, and to make recommendations with a view to preventing such mistakes in future.

Mr. MCENTEE asked the Minister of Health whether his attention had been called to the case of Mrs. Broad, who was forcibly removed from her home and confined in a mental hospital and was afterwards found to have been mistaken for another person living at a different address; and, in view of the public concern at the possibility of persons being removed and detained in such institutions to-day, if he would set up a public tribunal to inquire into the existing regulations and to suggest such new safeguards as would prevent any arrest and detention of sane persons in future.—Mr. SHAKESPEARE replied: The occurrence has been reported to my right hon. friend by the Middlesex County Council, who are the authority primarily responsible in the matter. The whole circumstances are being investigated by the council and the result of the investigation will be reported to him without delay. My right hon. friend must consider this report before he decides what action on his part is desirable.

Sir W. DAVISON: Can my hon. friend say whether it is a fact that no written particulars were given to the officers of the Middlesex County Council who were instructed as to the removal of this patient, and that they were instructed by telephone; and will he suggest to the Middlesex County Council, or whoever is the authority, that it is very undesirable that matters of great importance of this kind should be ordered by telephone without written instructions; and, indeed, whether it would not be possible for the officer certifying a person as mentally deficient to be present so as to identify the patient?

Mr. SHAKESPEARE: As I stated in the answer the precise facts are under inquiry, but I think I can say that if the facts as represented in the press are true after due inquiry has been held the whole House will desire to join my right hon. friend in expressing deep concern and regret that an incident of such a grave nature should have taken place.

Insurance of Young Children

Sir ARNOLD WILSON asked the Chancellor of the Exchequer whether, and if so when, it was intended to introduce legislation to give effect to the recommendation made in the report of the Committee on Industrial Assurance and Assurance on the Lives of Children under Ten Years of Age [Cmd. 4376].—Mr. HORE-BELISHA (Financial Secretary to the Treasury) replied: I am not yet in a position to say when action will be taken on this report.

THURSDAY, DEC. 14TH

Children in Receipt of Dependants' Benefit

Mr. DAGGAR asked the Minister of Labour the number of children in receipt of dependants' benefit from the unemployment insurance fund for the years 1930, 1931, 1932, and 1933 to date.—Sir HENRY BETTERTON replied: The only dates in the period named, for which separate figures are available showing the number of children in respect of whom dependants' benefit was authorised on applications for insurance benefit are Feb. 2nd, 1931, and Nov. 28th, 1932, when it is estimated that the numbers were approximately 1,194,000 and 847,000 respectively. These figures are not, however, strictly comparable in view of the changes in the conditions for the receipt of insurance benefit introduced in November, 1931.

Fatal Operation for Sterilisation

Mr. POTTER asked the Home Secretary if a recent inquest on a woman who died after an operation for sterilisation had been brought to his attention; and if he would give instructions that a record of any such happenings should be kept in the Home Office.—Sir J. GILMOUR replied: I have seen a newspaper report of the inquest in this case. I have no means of securing a record of such occurrences unless death results in circumstances which require a report to be made to the coroner; and I do not think that any public interest would be served

by my asking coroners to tabulate separately such cases as may be reported to them.

Mr. POTTER asked the Minister of Health if his attention had been drawn to a recent inquest on a woman after an operation for sterilisation; and if he would take steps to obtain statistics of the frequency with which such operations were performed in hospitals subject to his inspection.—Sir HILTON YOUNG replied: Yes, Sir, I have seen a newspaper report on the inquest referred to, in which the verdict recorded that sterilisation had been medically advised owing to the physical incapacity of the patient to withstand the risks she would incur in undergoing confinement. I do not think it would be useful to attempt to collect statistics of such cases.

Slum Clearance in Shoreditch

Mr. SUMMERSBY asked the Minister of Health when the actual work in connexion with slum clearance in Shoreditch would be started; how many new homes would be supplied; and what rents would be charged.—Sir HILTON YOUNG replied: I am about to confirm an Order made by the London County Council under the Act of 1930 for the compulsory purchase of the Drysdale-street area. The council have already agreed terms for the purchase of some of the properties in the area and preparatory work on a rehousing site has been begun. In connexion with this and other clearances to be undertaken in Shoreditch the borough council will provide rehousing accommodation for 400 persons and the county council about 2000 new dwellings. The weekly rents, which must comply with the statute, will, it is understood, be from 6*s*. upwards, exclusive of rates, according to the number of rooms, the type, and the location of the dwellings. The Ware-street area in this borough is being cleared under legislation preceding the Act of 1930. The rehousing accommodation for this area is on the point of completion.

Medical Treatment: Voluntary Schemes

Mr. JOEL asked the Minister of Health whether his attention had been called to a scheme in the Black Country under which the poorer residents of the middle-class who had just escaped coming under national health insurance were arranging a system of medical attendance by weekly payments whether well or ill; and whether he would investigate the possibilities of such a scheme with the object of assisting its extension in other districts.—Sir HILTON YOUNG replied: My attention has not been called to the particular scheme referred to, but I am aware that in certain parts of the country the medical profession have organised public medical service schemes for the medical treatment of persons for whom provision is not made under the National Health Insurance Acts. Such schemes, however, are matters of voluntary arrangement, and I have no power to take steps with a view to their extension.

Pasteurisation of Milk

Brig.-General CLIFTON BROWN asked the Minister of Health whether his attention had been drawn to the report of the Milk Commission as to the condition of some of the smaller pasteurisation plants in the country; whether these plants were periodically inspected; and what steps he was taking to see that safe milk was produced by the pasteurisation processes in use.—Sir HILTON YOUNG replied: I am aware of the remarks in the report respecting pasteurisation. Under the law there is no control of the process except in the case of milk which is sold under licence as "pasteurised milk." Establishments so licensed are subject to inspection by the officers of the local authority granting the licence, and it is one of the conditions for a licence that the type of apparatus and the methods employed shall be satisfactory to the authority. An officer of my department is making general inquiries into the efficiency of plants and I propose to issue a memorandum for the guidance of local authorities and their officers in their inspection of such plants.

Sir FRANCIS FREMANTLE: Will my right hon. friend include in his memorandum a suggestion that the veterinary surgeons to be appointed should include this as part of their training and responsibilities so as to have only one inspector instead of two?

Sir HILTON YOUNG: I shall be happy to consider my hon. friend's suggestion.

Disposal of Surplus Milk

Sir PERCY HURD asked the Minister of Agriculture whether, in view of the expected surplus of liquid milk in the spring, he would take steps to make part of this surplus available for schools and welfare centres instead of allowing it to endanger the success of the milk-marketing scheme by passing milk into manufacture at prices unremunerative to the producer.—Mr. ELLIOT replied: As my hon. friend will be aware, the National Milk Publicity Council already does much useful work in the direction of extending the consumption of milk in schools. I am not clear what further steps my hon. friend has in mind.

Sir P. HURD: Has the right hon. gentleman a fund which would assist a further extension of this excellent method?

Mr. ELLIOT: I am afraid that I have no fund.

Mr. RHYS DAVIES: Will the right hon. gentleman get in touch with the Board of Education so that if there is a surplus, local education authorities may get hold of this milk and give it to the children in the schools?

MONDAY, DEC. 18TH

Leave of Indian Medical Officers and Nurses

Sir FRANCIS FREMANTLE asked the Secretary of State for India: (1) for what reason privilege leave out of India to all medical officers and nurses in military employment had been stopped except on urgent compassionate grounds; and whether any such restriction had been placed on any other branches; and (2) for what reason the combined leave already granted to certain medical officers in India was being held in abeyance without reasons being given.—Sir S. HOARE replied: I have received no information to the effect that leave has been stopped, but will make inquiries if my hon. friend wishes.

Maternal Mortality in India

Miss RATHBONE asked the Secretary of State for India whether, in view of the fact that the number of deaths in childbirths in India was estimated by Sir John Megan, late surgeon-general for India, as 200,000 per annum, he would request the Government of India to set up a commission to inquire into the reason for and methods of reducing this maternal mortality.—Sir S. HOARE replied: The hon. Member's suggestion will be communicated to the Government of India.

Furunculosis

Captain CUNNINGHAM-REID asked the Minister of Agriculture if he had accepted the recommendations contained in the second interim report of the Furunculosis Committee; and whether it was proposed to introduce legislation to give effect to the recommendations of the committee.—Mr. ELLIOT replied: I hope it will be possible to introduce a Disease of Fish Bill this session to deal with the recommendations of the report which require legislation; and other recommendations are under consideration.

Water-supplies

Mr. LEVY asked the Minister of Health how many regional committees had been formed to deal with water-supply; what areas they covered respectively; and what they had accomplished.—Mr. SHAKESPEARE replied: Six regional committees have been formed covering the areas: South-West Lancashire (22 authorities), West Riding of Yorkshire (142 authorities), Sherwood Area of Nottinghamshire (22 authorities), Isle of Wight (11 authorities), Holland, Lincolnshire (12 authorities), and South Buckinghamshire (6 authorities). The Sherwood Area Committee has issued its report, including an agreed plan for the allocation of the water resources. The other committees are engaged in surveying needs and resources and formulating plans for future supplies. Measures have been taken for the appointment at an early date of two additional regional committees covering large areas.

Special Treatment for Deaf Girl

Captain SOTHERON-ESTCOURT asked the Parliamentary Secretary to the Board of Education whether his attention had been called to the detention in a Leeds institution of Ina Draper, aged 11, of Ferrybridge, Yorkshire; why it was thought necessary to take away the girl direct from

the school where she was being instructed instead of from her home; and whether the cost of this special treatment was borne by the education authorities or by the parent, who had had no voice in the educational arrangements made for his daughter.—Mr. RAMSBOTHAM replied: I have made inquiries into this case. This girl was found, after repeated medical examinations, confirmed by the head teacher of the elementary school she was attending, to be too deaf to be taught in a class of hearing children in an elementary school. As the father refused to allow her to be sent to a special school for the deaf, the West Riding Education Authority obtained an Order from the Court committing her to the care of Mr. Andrews, head teacher of the Blenheim Residential Deaf School at Leeds, this being the nearest available special school. The father repeatedly refused to obey this Order, and the local education authority, therefore, considered the most effective way of enforcing it to be for Mr. Andrews to assume the custody of the child at the school which she attended. She was accordingly taken to the Leeds school on Sept. 22nd, 1933. The cost of her attendance at the Leeds school is being borne by the West Riding Education Authority, under Section 65 of the Education Act, 1921. The parent is liable to contribute such weekly sum, if any, as may be agreed on between him and the local government authority. The question of a contribution by the parent is now under consideration by the authority.

Nutrition of School-children

Mr. DUNCAN asked the Parliamentary Secretary to the Board of Education the conclusion reached as a result of an inquiry into the nutrition of school-children made by the London County Council recently.—Mr. RAMSBOTHAM replied: My noble friend understands that 1281 children in the 10-year old age-group were examined, the schools selected being mainly in poor areas. Of these children 93·5 per cent. were found to be well nourished and 6·5 per cent. poorly nourished. Only two children were grossly ill nourished. The poorly nourished children were not found to be principally the children of the poorest parents; in fact the percentage of poorly nourished children of parents in full-time employment was found to be higher than the average for the whole group. In view of the prolonged economic depression, the result of the inquiry is regarded by the L.C.C. as very reassuring.

TUESDAY, DEC. 19TH

Osteopathy

Sir WILLIAM DAVISON asked the Minister of Health whether his attention had been called to the increase in the practice of osteopathy in this country; and whether he would institute an inquiry into the principles and practice of osteopathy, with a view to the protection of the public from treatment by untrained practitioners.—Mr. SHAKESPEARE replied: My right hon. friend has considered this matter, but, as indicated in the reply given on Nov. 30th, he does not think that an inquiry on the lines suggested would serve any public interest.

Sir W. DAVISON: Does my hon. friend not realise the danger to the public in having unqualified practitioners practising this skilful art, and does he not think it desirable that these gentlemen should form their own college and give their own certificates to people whom they consider qualified to act? (Hear, hear.)

Mr. SHAKESPEARE: I do not know that any more harm is being done to the public by allowing the practice of osteopathy than there is by allowing the practice of unqualified medical practitioners. That is at present the position of the law.

MEDICAL NEWS

University of Oxford

At a congregation held on Dec. 16th the degree of doctor of medicine was conferred on W. H. McMenemey, and the degrees of B.M. & B.Ch. on those whose names we gave last week (p. 1400) as passing the examination.

The Philip Walker studentship in pathology, of an annual value of £200, is offered to a student who will devote his time to original pathological research. Particulars may be found in our advertisement columns.

University of London

At recent examinations the following candidates were successful:—

THIRD EXAMINATION FOR M.B., B.S.

Honours.—E. G. L. Bywaters (*b*), Middlesex Hosp.; Dorothy J. Healey (*a*, *c*), Roy. Free Hosp.; Woolf Mushin (*a*), London Hosp.; A. K. Price (*d*), St. Thomas's Hosp.; George Qvist (*d*, *e*, *university medal*), Univ. Coll. Hosp.; E. B. Rotherham (*c*), London Hosp.

(*a*) distinguished in medicine, (*b*) distinguished in pathology, (*d*) distinguished in surgery, (*c*) distinguished in obstetrics and gynæcology.

Pass.—Herbert Agar, Univ. of Leeds; D. A. Andersen, Univ. Coll. Hosp.; H. G. E. Arthure, Charing Cross Hosp.; Arthur Barber, St. Bart.'s Hosp.; Jessie G. Belilios, King's Coll. Hosp.; L. J. Bevnon, St. George's Hosp.; M. L. Bynoe and G. T. W. Cashell, King's Coll. Hosp.; R. F. M. Child, St. Mary's Hosp.; R. H. P. Clark, London Hosp.; R. D. Clay, King's Coll. Hosp.; C. P. Collins, Univ. Coll. Hosp.; Dorothy C. J. Cookson, Roy. Free Hosp.; D. R. Crabb, St. Bart.'s Hosp.; S. W. Croome, King's Coll. Hosp.; J. R. Crumble, St. Bart.'s Hosp.; Hilda M. S. Davidson, King's Coll. Hosp.; D. O. Davies, St. Bart.'s Hosp.; E. J. Dennison, St. Thomas's Hosp.; Anastasio D'Souza and G. E. Dunkerley, Univ. Coll. Hosp.; Mary Evans, King's Coll. Hosp.; S. T. Falla, London Hosp.; H. F. M. Finzel, Univ. of Bristol; H. C. Fletcher-Jones, Westminster Hosp.; T. A. Gavin, Guy's Hosp.; W. F. T. George, St. Bart.'s Hosp.; G. H. Gibbens and R. G. B. Gilbert, St. Thomas's Hosp.; Vladimir Glass and Harris Goldfarb, Univ. Coll. Hosp.; Nora J. Gould and Phyllis N. Greene, Roy. Free Hosp.; G. J. Griffiths, Westminster Hosp.; John Grocott, Guy's Hosp.; H. W. Hall, Univ. Coll. Hosp.; H. A. R. Hamilton and E. H. C. Harper, St. Thomas's Hosp.; R. V. Harris, St. Bart.'s Hosp.; John Howkins, Middlesex Hosp.; W. A. Hyslop, London Hosp.; Maisie F. James and Elsie E. Johnson, Roy. Free Hosp.; W. B. Johnston, St. Mary's Hosp.; A. B. King, Univ. Coll. Hosp.; Herbert Kirman, King's Coll. Hosp.; Janet Y. Laidlaw, Roy. Free Hosp.; R. A. Q. Lay, Guy's Hosp.; Maurice Lee, St. Thomas's Hosp.; J. T. R. Lewis, Middlesex Hosp.; R. I. Lewis, London Hosp.; R. G. Macfarlane, St. Bart.'s Hosp.; Catherine B. Mackinlay, King's Coll. Hosp.; J. D. Macleod, St. Thomas's Hosp.; G. W. May, London Hosp.; R. J. G. Morrison, St. Bart.'s Hosp.; Irene P. Murray, King's Coll. Hosp.; T. S. Nicol, Charing Cross Hosp.; H. E. S. Pearson, St. Thomas's Hosp.; E. S. Pope, St. Bart.'s Hosp.; F. W. Roberts, Middlesex Hosp.; J. B. Robinson, Guy's Hosp.; Christine M. Rooke, Mary Scouloudi, and Maxime Shun-Shin, Univ. Coll. Hosp.; S. F. Smith, St. Thomas's Hosp.; Cicely Steer, Roy. Free Hosp.; G. H. Stuart and S. C. Suggit, Univ. Coll. Hosp.; Ian Taylor and W. N. P. Wakeley, King's Coll. Hosp.; Violet H. Whapham, Roy. Free Hosp.; P. R. Wheatley, Guy's Hosp.; J. C. Winteler, King's Coll. Hosp.; and R. B. D. Wright, St. Mary's Hosp.

The following candidates have passed in one of the two groups of subjects:—

Group I.—Mary A. C. Adams, Roy. Free Hosp.; E. R. Bennion, Westminster Hosp.; Jean W. D. Calman, Univ. Coll. Hosp.; P. E. Dipple, St. Bart.'s Hosp.; R. J. K. Fleming, London Hosp.; J. M. Flower, Westminster Hosp.; J. C. Harvey, St. George's Hosp.; Alice M. Head, Roy. Free Hosp.; Alice M. Kaye, King's Coll. Hosp.; Gwendoline D. Knight, Roy. Free Hosp.; H. B. Lee, St. Bart.'s Hosp.; A. R. V. Patel, Guy's Hosp.; Geoffrey Phipps, St. Thomas's Hosp.; Silvia W. Pyddoke, Roy. Free Hosp.; V. B. Reckitt, Guy's Hosp.; Margaret H. Scott, Roy. Free Hosp.; Ralph Shackman, St. Bart.'s Hosp.; M. G. Stratford, Univ. Coll. Hosp.; B. A. Thomas, St. Bart.'s Hosp.; and Fanny D. Wride, Roy. Free Hosp.

Group II.—R. M. H. Anning, St. Mary's Hosp.; T. A. Baldwin and V. H. Barnett, Univ. Coll. Hosp.; Mary A. M. Bigby, Roy. Free Hosp.; C. F. R. Briggs, Univ. Coll. Hosp.; E. N. Brockway, St. Thomas's Hosp.; R. H. Carpenter, St. Bart.'s Hosp.; B. S. Carter, St. Thomas's Hosp.; J. A. Chivers, St. Bart.'s Hosp.; C. F. Critchley, St. Thomas's Hosp.; O. G. Edholm, St. George's Hosp.; K. W. Hardy, London Hosp.; S. T. Hayward and H. C. Hugh, St. Bart.'s Hosp.; Elizabeth M. James, Roy. Free Hosp.; N. K. Kai, Univ. Coll. Hosp.; F. R. Kilpatrick and J. A. W. Miller, Guy's Hosp.; P. H. Nankivell, Middlesex Hosp.; H. E. Offord, St. George's Hosp.; Doris E. Oxford, Roy. Free Hosp.; R. B. Peckham, Guy's Hosp.; Eric Pereira, St. George's Hosp.; Harold Royle and B. F. B. Russell, St. Bart.'s Hosp.; J. V. Shemilt, St. Thomas's Hosp.; G. J. Sophian, St. Bart.'s Hosp.; W. P. Stamm, Guy's Hosp.; T. P. Thamotheram, Ceylon Med. Coll. and King's Coll. Hosp.; A. S. Thorley, Univ. Coll. Hosp.; G. L. Timms, St. Thomas's Hosp.; and Kathleen M. Webster, Roy. Free Hosp.

University of Birmingham

At a congregation held on Dec. 15th the following degrees and diplomas were conferred:—

M.B., Ch.B.—M. I. Ghattas, Joan F. M. E. Lamplugh, F. W. H. McMurdo, Bertha Marston, and Kenneth Watson-Jones.

L.D.S.—E. B. Cheffins, C. L. Dawson, A. P. Eaton, M. J. Middleweek, John Osborne, and J. C. Price.

Royal College of Surgeons of England

A meeting of the council was held on Dec. 14th with Sir Holburt Waring, the president, in the chair. A resolution of condolence was passed on the death of Mr. R. P. Rowlands, a member of the council, and formerly a vice-president of the college.

The following were admitted to the Fellowship :—

Arthur Conner Lysaght, L.R.C.P. ; Geoffrey John Orlando Bridgeman, M.B. Camb. ; Eric John Greenwood, M.B. Camb. ; George Spencer Ferraby, M.B. Lond. ; Noel Theodore Hannaford Schafer, M.B. Melb. ; Muriel Sydney Hulke, M.B. Lond. ; Patrick Herbert Lyon Playfair, L.R.C.P. ; Albert Saverymuttu Rajasingham, L.R.C.P. ; Jack Albert White, M.B. Lond. ; Emlyn Evans Lewis, L.R.C.P. ; Anthony Harvard Baker, M.B. Manch. ; Gordon Nuttall Bailey, L.R.C.P. ; Francis Harry Hume Finlaison, L.R.C.P. ; Karsonlal Keshavlal Dalal, M.B. Bombay ; Victor Horsley Riddell, L.R.C.P. ; Herbert Edward Harding, L.R.C.P. ; Richard John Vulliamy Battle, L.R.C.P. ; Lewis Philip Jameson Evans, L.R.C.P. ; David Lincoln Lewis, L.R.C.P. ; Willie McNeill Niblock, M.B. Camb. ; Theodore Schrire, M.B. Cape Town ; John Hugh Bruce Beal, B.M. Oxf. ; Gilbert Washington Causey, M.B. Liverp. ; Barton Gilbert, M.B. Lond. ; Charles Laurence Heanley, L.R.C.P. ; Mir Naeem Mahmood, M.B. Punjab ; Robert Wallace Nevin, M.B. Camb. ; Roland Barnes, M.B. Manch. ; Edward Stanley Lee, M.B. Lond. ; Walter Gordon Campbell, M.B. St. Andrews ; Thomas Lightbody Chapman, M.B. Glasg. ; George Norman Clark, M.B. Aberdeen ; Frederick Plimmer Furkert, M.B. N.Z. ; Andrew Dorset Harper, M.B. Liverp. ; Bryan Tobyn Keon-Cohen, M.B. Melb. ; George Edward Larks, M.B. Sheff. ; Geoffrey James Lillie, M.B. Melb. ; Norman John Logie, M.B. Aberdeen ; Cecil Patrick Malley, M.B. Dub. ; Kekoo Muncherji Masani, M.B. Bombay ; Mortimer Philip Reddington, M.B. N.Z. ; and Raymond Victor Rickard, M.B. Sydney.

Diplomas of Membership were granted to H. V. Corbett (Liverpool), J. F. Galloway (Liverpool), and A. V. House (Bristol).

At the Primary Examination for the Fellowship held recently, 181 candidates presented themselves, of whom 66 were approved and 115 were rejected. The following are the names and medical schools of the successful candidates :—

A. E. Alcock, M.B. Melb., Univ. Coll. ; G. H. Baines, Camb. and St. Thos. ; A. H. Barber, M.B. Birm. ; J. R. Blackburne, M.R.C.S., St. Bart.'s ; E. J. J. Borges, M.B. Bombay, Middlesex ; J. M. Brown, Guy's ; G. H. L. Bullmore, Oxford ; J. E. Cates, St. Bart.'s ; N. Chakravarty, M.R.C.S., Calcutta and St. Bart.'s ; A. K. Colley, M.D. Toronto ; W. S. Creer, M.R.C.S., Liverpool ; C. H. C. Dent, Camb. and London ; A. de Quadros, M.B. Bombay, London ; A. E. De Sa, M.B. Bombay, Middlesex ; F. S. A. Doran, Camb. and Manchester ; T. J. Fairbank, Camb. ; G. A. Fairlie-Clarke, St. Bart.'s ; M. Fallon, M.B. Dub. ; Doreen J. Forrester, M.B. Edin., Univ. Coll. ; N. Garber, M.B. Wits'rand, Middlesex ; W. H. Gordon, M.B. Glasg, St. Bart.'s ; T. A. Green, M.B. N.Z., Univ. Coll. ; J. V. Guinane, M.B. Sydney ; V. P. Gupta, M.B. Lucknow, Univ. Coll. ; G. K. Harrison, M.D. Toronto ; A. H. Harvie, M.B. N.Z., Univ. Coll. ; B. B. Hickey, Oxford and London ; G. M. Housden, M.B. Lond., Guy's and Middlesex ; W. R. S. Hutchinson, M.R.C.S., Camb. and St. Thos. ; J. G. H. Ince, M.R.C.S., Univ. Coll. ; R. A. Jamieson, Edin. and Middlesex ; S. A. Jenkins, Cardiff ; M. N. Khanna, M.B. Punjab, Middlesex ; R. C. Laird, M.D. Toronto, Middlesex ; C. R. Lambert, M.B. N.Z., Univ. Coll. ; W. McGrath, M.B. Sydney, Middlesex ; H. C. Maclaren, Camb. ; J. A. McLauchlan, M.B. Edin. ; F. de S. Malone, M.B. Belf., Middlesex ; S. Marinker, Middlesex ; C. E. P. Markby, M.R.C.S., Camb. and St. Thos. ; N. A. Miller, M.R.C.S., St. Thos. ; M. D. Minhas, M.B. Punjab., Guy's ; S. C. Misra, M.R.C.S., Lucknow and St. Bart.'s ; A. Nimalasuria, Ceylon and King's Coll. ; R. M. Rawle, M.B. Sydney, Middlesex ; R. G. Reid, M.B. Lond., Guy's ; I. F. Rose, Oxford ; E. A. Rowlands, M.B. Melb., Univ. Coll. ; C. R. Salsbury, M.D. Kingston ; E. Samuel, Middlesex ; J. Schorstein, M.D. Vienna, Univ. Coll. ; G. S. Seed, M.R.C.S., Leeds ; Ruby G. Sharp, M.B. Cape, Univ. Coll. ; Dorothy A. Sharpe, M.R.C.S., Lond. Sch. Med. for Women ; P. P. Sheth, M.R.C.S., Bombay and Middlesex ; W. H. M. Smith, M.B. Edin., Middlesex ; N. J. Solomon, M.B. Melb., Middlesex ; J. B. Sugden, M.B. Lond., Leeds ; N. J. Townsley, M.B. Belf., Middlesex ; E. B. H. Trehair, M.B. Wits'rand, Univ. Coll. ; D. M. Wallace, Univ. Coll. ; J. Wasserzweig, M.R.C.S., London ; A. D. Willis, Guy's ; C. B. I. Willey, Oxford and St. Bart.'s ; G. Wynn-Williams, King's Coll.

Licences in dental surgery were granted to the following :—

H. W. Abson, H. R. P. Annett, Gordon Ashcroft, A. G. Bagshaw, G. C. Baird, R. O. Borgars, J. D. Brodie, S. C. Burgess, E. O. Clough, H. L. P. Coetzer, F. I. S. Copley, K. H. Couton, A. C. Davies, Beryl M. Davies, S. J. Davies, M.R.C.S., W. V. A. Denney, W. G. C. Dimock, N. S. D. Evans, N. H. Everett, J. H. G. Fensom, Edward Ferguson, H. D. Firth, E. R. D. Fraser, E. J. Freeman, J. A. Gaudin, David Gent, N. E. Gillham, A. R. Gillies, N. H. Gittins, J. V. Goldie, Albert Gorton, C. I. Hagger, W. W. Hargreaves, N. G. Harrison, L. B. Holmes, R. V. Hooper, R. D. R. Hopkinson, C. H. James, E. C. Jenet, G. V. Ledger, J. M. McGarigle, N. E. Miles, J. I. H. Morris, Mary C. Morrison, E. H. Musgrove, C. G. O. Nevard, Jack Nicolls, W. E. H. Oakley, Clifford Parmée, W. B. Priest, Alvin Pryor, J. E. Read, Arthur Ritson, D. H. T. M. Robertson-Ritchie, J. E. C. Robinson, P. A. Roche, G. J. Rubie, J. C. Smith, K. A. Smith, Ella L. B. Stamper, W. E. Starkey, J. A. G. Starnes, Albert State, Frank Stevens, E. V. Stone-Wigg, F. E. A. Taylor, C. V. F. Thomas, J. H. Thompson, S. N. Tinkler, Frank Townend, R. A. C. Turton, Harry Varney-Burch, H. F. Vere, and I. E. W. Whitling.

Mr. Ernest W. Hey Groves was re-elected a member of the court of examiners. Mr. G. Gordon-Taylor was elected examiner in anatomy and Dr. G. A. Buckmaster examiner in physiology, for a primary examination for the fellowship to be held at Melbourne in November, 1934, and at Dunedin in December, 1934.

The council considered the resolution which was carried at the annual meeting of fellows and members on Nov. 16th : "That this 44th annual meeting of Fellows and Members of the Royal College of Surgeons of England reaffirms that members, who constitute 90 per cent. of the College, should have some representation on the Council, a similar resolution having been passed 43 times and never once lost." The following reply to the resolution was adopted : "The Council, having considered the report of the proceedings at the annual meeting of Fellows and Members on Nov. 16th, is not prepared to reopen the question of altering the constitution of the College."

University of Manchester

At recent examinations the following were successful :—

FINAL EXAMINATION FOR M.B., CH.B.

W. E. Bowden, P. V. Cant, H. W. Clegg, S. A. Cohen, F. T. Dodd, James Holme, R. S. Hynd, Harry Marshall, Helen E. Rogerson, and T. P. Sewell.

Part I.—John Boardman, E. G. Dryburgh, R. E. Hirson, Eileen M. Hughes, T. S. B. Kelly, H. D. B. North, Ralph Spencer, John Starkie, and Marjorie Swain.

University of Edinburgh

On Dec. 15th the following degrees and diplomas were conferred :—

M.D.—D. S. Cherry, *W. S. M'R. Craig, E. J. C. Hewitt, Pauline Klenerman, ***John M'Michael, Moray Melvin, J. D. W. Pearce, *R. B. Phillips, H. R. Stubbins, and **W. A. R. Thomson.

*** Awarded gold medal for thesis.
** Highly commended. * Commended.

M.B., Ch.B.—C. C. Barker, J. G. Bate, R. D. Bell, W. T. Black, R.T. Bokwe, E. D. Caldwell (in absentia), J. L. Carmichael, Robert Carmichael, A. H. C. Carter, C. T. C. Chia, H. M. Clark, Hyman Cohen, W. H. Derham, N. V. M. Dodds, J. A. Falconer, L. L. Freeman, H. G. Gibson, H. C. Hingst, C. L. Joseph, E. D. T. Lewis, R. S. B. M'Clean, S. K. Mangal, G. E. Menzies, Hymie Meyers, R. W. Morrison, T. D. Paton, G. R. Pile, T. F. Quin, D. A. H. Robson, C. S. Sandeman, Louis Schapiro, Joseph Stark, D. V. Summers, P. W. Tait, Peter Taylor, George Watt, Katharine H. Welsh, J. W. O. Will, and C. M. Wilson.

University of Dublin

At recent examinations in the School of Physic, Trinity College, the following candidates were successful :—

M.CH.

F. W. G. Smith.

FINAL EXAMINATION FOR M.B., B.CH., AND B.A.O.

Medicine.—Kevin O'Toole, Helena G. G. Bennett, J. A. McIlveen, Alice V. Cunningham, R. H. Simon, S. G. O'Neill, Marion A. G. Kennedy, Eva E. Moore, W. N. Whiteside, P. B. Hafner, S. M. Freedman, W. A. Clarke, G. N. Taylor, E. G. Ashton, and Sheila K. Henderson.

Surgery.—D. S. Torrens, P. G. Daly, I. T. F. Wiley, G. S. S. Harty, D. T. Annesley, G. C. V. O'Driscoll, E. G. Ashton, S. H. R. Price, S. G. O'Neill, W. H. E. McKee, Emanuel Howitt, J. A. Mallie, E. S. A. Ashe, A. W. Callaghan, Norman Jackson, J. J. Martin, Mary J. Ahern, Marion A. G. Kennedy, and E. G. Graham.

Midwifery.—A. C. Pilkington, Nathan Weinstein, H. D. McGorry, and D. S. Quill (passed on high marks) ; D. J. Bradley, P. St. G. Robinson, F. P. E. Smith, I. A. Walsh, H. L. Connor, T. A. Cunningham, J. F. Harbinson, Patrick O'Brien, R. C. Tyner, George Hannigan, P. A. McNally, H. F. T. Deane, W. G. B. Halliden, E. B. McEntee, Doris E. Morton, C. O. Greer, A. F. J. Delany, D. J. O'Shaughnessy, J. J. Martin, Charlotte F. Pike, H. S. J. van Niekerk, and C. M. T. Adamson.

D.P.H.

Part II.—R. P. Pollard.

D.P.M.

Part II.—O. W. S. FitzGerald.

B.DENT.SC.

D. G. Walker and L. W. McCaughey.

Post-graduate Courses in Berlin

International post-graduate courses are to be held in Berlin on the following subjects : internal medicine (March 11th to 17th), radiology (March to April), surgery (April 9th to 14th), malignant tumours (March to April), and the biology of heredity (April 23rd to 28th). Monthly courses in all the special departments, including practical work, will also be held. Particulars of all these courses may be had from the information bureau of the Kaiserin Friedrich-Haus, Robert Koch-platz 7, Berlin, N.W.7.

Medical Society of London

The programme of the Medical Society of London during the second half of the winter session has now been issued. It opens with a pathological meeting on Jan. 8th, after which, on the 22nd, there will be a discussion on the value of pre-operative investigations, introduced by Dr. F. J. Poynton and Mr. Norman Lake. On Feb. 12th Dr. Killick Millard will open a discussion on the present position of the vaccination question. On Feb. 19th and 28th and March 5th the Lettsomian lectures will be delivered by Dr. C. E. Lakin, who will speak on disturbances of the body temperature. On Feb. 26th a discussion on arterial disease of the extremities will be introduced by Prof. E. D. Telford, and on March 12th a discussion on the treatment of cancer of the uterus, by Mr. Victor Bonney and Dr. Malcolm Donaldson. The next discussion is on March 26th and the subject, introduced by Dr. T. L. Hardy and Dr. Thomas Hunt, is functional disorders of the bowel. The last ordinary meeting on April 23rd will be devoted to a discussion on failures of gastric surgery which will be opened by Dr. John Ryle, Mr. A. J. Walton, and Dr. Eustace Callender. The last fixture for the season will be the annual general meeting on May 14th, when Sir Charles Sherrington, O.M., will deliver the annual oration. The annual dinner will be held at the Trocadero Restaurant, London, W., on Tuesday, March 6th.

London Hospital Sunday Fund

It was reported at the annual meeting of this fund last week that the total receipts were £68,410, a fall of £5230. Donations have fallen by nearly £2000, but legacies are keeping up. For several years there has been a decline in the collections. When the fund was established in 1873, 1077 congregations gave £25,855; last year 2074 congregations gave £24,520. With a view to establishing in every congregation a committee which will direct its efforts to those who spend the week-ends away, a ladies' committee is to be set up to assist in the organisation of collections.

Bakewell Cottage Hospital

The Duke of Devonshire, president of the Bakewell and district war memorial cottage hospital, recently opened an extension which has cost about £2500. The new wing, named after Mr. E. L. Hoyle, the chairman, includes two wards, with a glass-covered open-air ward opening from each of them, and additional staff and kitchen accommodation.

Aylesbury Isolation Hospital

The Aylesbury joint hospital board, which is responsible for an area of some 200 square miles, has reconstructed the old isolation hospital at Aylesbury. The old building has been converted into a block containing nine cubicles, and the additions comprise an administrative block with accommodation for the matron, sister, nurses, and domestic staff, two separate blocks for the reception of scarlet fever and diphtheria patients, a porter's lodge, mortuary, laundry, ambulance garage, and drying, disinfectant, and other rooms. The grounds have been attractively laid out.

Paying Patients at the London Hospital

After consultation with the staff the house committee have agreed to a scheme whereby from 35 to 40 rooms and cubicles can be adapted for paying patients of moderate means without any appreciable curtailing of the number of beds available for general patients. Although no structural alterations will be necessary, the provision of an operating theatre suite and the general adaptations and alterations involved will cost approximately £10,000. The result of the quinquennial appeal has been disappointing, the total up to the present amounting to only £66,000.

Poplar Hospital for Accidents

At the festival dinner last week it was stated that while the hospital's income from invested funds is £8000 a year the expenditure is about £28,000. Some 40,000 accident and medical cases are dealt with in 12 months, and last year the attendances in the casualty and out-patient department numbered 138,000. It was explained that the most pressing need is a new out-patient department, estimated to cost £30,000, and, thanks to the contributions of the Bernhard Baron trustees, it will now be possible to make a start.

Blind Voters

Under the existing law blind persons are enabled to seek the assistance of the presiding officer in order to register their vote at an election for Parliament or council. The Blind Voters Act, 1933, while not interfering with this privilege, also allows the blind person to register his vote with the help of a companion. He is, however, limited in his choice, for his companion must either be some one also entitled to vote in the same election or a near relative not under 21 years of age. The companion must of course respect the secrecy of the ballot and may not assist more than two blind persons at any one election.

Middlesex Hospital and Middlesex County

At a meeting of the court of governors of Middlesex Hospital last week, Prince Arthur of Connaught, the chairman, described the system of collaboration in radiological work which has been arranged between the hospital and the Middlesex county council. A year ago, at the request of the council, the hospital lent temporary assistance and supervision in radiological work to the North Middlesex Hospital in consequence of the death of its medical superintendent. This arrangement has now been placed on a permanent footing, and the county council has engaged a full-time radiological officer, and appointed Mr. B. W. Windeyer, head of the Middlesex Hospital's department of radium therapy and research, as its consultant.

Institute for the Scientific Treatment of Delinquency

This institute held an At Home at 30, Curzon-street, London, on Dec. 7th, in order to raise funds for its projected clinic. Sir Herbert Samuel, who presided, narrated the history of penal reform during the present century and recalled the work of Mr. Herbert Gladstone (afterwards Viscount Gladstone) to whom he had been under-secretary at the Home Office, which resulted in the passing of the Probation Act and the Children Act, 1908, the establishment of the Borstal system, and many other beneficent measures. Englishmen of 50 years hence would, he prophesied, find the ideas of to-day about the punishment of crime as stupid and inhumane as persons of to-day considered the chaining-up and whipping of lunatics.

Prof. W. Langdon Brown explained some of the psychological and endocrine causes of delinquency and pointed out that imprisonment was a mere act of cruelty, of no value to the individual, and a protection to society only during the time it lasted. Dr. J. A. Hadfield said that the institute proposed to assist magistrates by making detailed reports on offenders. It had already established this service at the West End Hospital for Nervous Diseases, and one of its officers was on duty five days a week to conduct physical and psychiatrical examinations. Dr. John Rickman asked whether any new movement had ever made such modest claims. Membership of the institute was confined, he said, to persons technically qualified to advise on the psychological causes of delinquency; it aimed at replacing no one, but merely at unifying the present excellent efforts of other bodies and assisting with technical knowledge. It needed a clinic, with a library, offices, and facilities for research and aimed later at establishing branch clinics in the provinces. Mr. Claud Mullins, the metropolitan magistrate, reminded the institute that a detailed scientific report merely increased the magistrate's difficulties unless appropriate treatment were available, but Dr. Hadfield reassured him that the institute already aimed at treating, at any rate, the type of sexual offender that gave much trouble to magistrates. Sir Francis Fremantle urged the appropriate use of the big mental deficiency colonies such as that recently opened by the Hertfordshire county council, and inquired whether the institute could perform the difficult work of linking up the local authorities with the magistrates. Canon Donaldson asked the institute to instruct parish priests, who saw many cases of exhibitionism and were well placed to educate public opinion; and Mr. Bishop described the success of a similar movement which he had founded in Australia 40 years ago, and which now had 25 branches. He stressed the value of monthly conferences between psychologists and magistrates.

PANEL AND CONTRACT PRACTICE

Socialised Medical Service

ON Friday last Mr. Somerville Hastings put before the Lewisham division of the British Medical Association suggestions for the conduct of medical practice on lines familiar to those who have listened to presidential addresses at the Socialist Medical Association. The medical services, he said, should be free to everyone, payment for them being made out of the rates on a whole-time salary basis. Money was always a difficulty with patients: if the doctor visits frequently he is thought to be running up a bill; if he tries to avoid such a charge by staying away he is reproached with neglect. Fees were just as difficult. The time-honoured custom of the profession was to suit the fee to the patient's ability to pay; that would be done on his plan through the rates. The ratepayer admitted to hospital would, if able to do so, pay the full cost of maintenance there. Medical charges would again be covered by the rates, the recipient of professional services paying nothing directly to the attending doctor. Mr. Hastings spoke of the number of services which within recent years had been removed from the province of the general practitioner—preventive medicine, infectious diseases (except for diagnosis), lunacy, treatment of school-children, much maternity work, tuberculosis (again except for diagnosis), venereal disease, and the treatment of in-patients at hospital. Rheumatism, orthopædics, and cancer might soon be added. The general practitioner, he seemed to infer, was an excellent diagnostician, but when treatment was required only the consultant, with his system of team workers, was really efficient. At present the London County Council had no out-patient departments attached to their hospitals—but they were coming. It was hoped to make them consultative; a man who had a mastoid operation performed in hospital could be discharged earlier if he could attend the out-patient department daily to have the wound dressed. (He did not explain why a practitioner of some years' standing, who had himself held house appointments, should be regarded as less competent to do such work than the newly qualified whole-time officer or the probationer nurse acting under his instruction.) Mr. Hastings regarded the present situation as dangerous. There was so much time wasted in going round to see patients who desired the services of Dr. A. rather than those of Dr B., who was nearer. The successful practitioner had no time or leisure to keep up to date. At present research work was all done in hospitals and largely by team work, but surely practitioners should also be capable of research. Ill health cost the nation about 200 million pounds a year. The preventive medical service cost 20 million pounds, and treatment services another 90 million pounds. He doubted whether the State was getting value for its expenditure. Under the scheme he envisaged there would be a unit of service for about 50,000 people, and, except for cases that needed visiting at home, the work would all be done in a central clinic by a staff of 20 doctors working in conjunction with specialists. Each member of the staff would have a fixed number of names on his list, and if very popular he might have a waiting list. There were always patients who would not go on any list, and they would be allocated to the doctors with the smaller lists. But with no extra pay for extra names, what inducement would there be for the keen man to remain keen? Mr. Hastings suggested that inquiry might be made, if too many patients left any particular doctor's list, whether the cause was a "deterrent" attitude. But he does not want bureaucratic control nor too early specialism. All should be general practitioners first of all; but the tedium of their present work—writing notes about cases, and so forth—might be mitigated by efficient secretarial help at the clinic. Hospitals and convalescent homes would be attached to the clinics where, one may suppose, a practitioner would be allowed occasionally to see his patient after making the diagnosis, although it seemed quite clear from Mr Hastings's remarks that the practitioner would not be called in to do any treatment Under such a socialised medical service, private practice would be allowed to a doctor who did not come into the service, but the aim would be to make the service so attractive that rich and poor alike would flock to the State doctor at his central clinic. In time, he thought, the public would become just as much attached to these clinics as they were at the present time to the hospitals, where in frequent instances they were quite unable to mention by name any one member of the staff. The public, too, were extraordinarily bad judges of a doctor's worth. A surgeon after skilfully performing some operation might feel so confident of its success that he would hardly do more than put his head round the door to see that everything was satisfactory. He was judged by the patient to be a man who took no trouble with his cases—anything might have happened for all he cared. Another surgeon, not so competent, makes a muddle of some operation and complications occur. He has sleepless nights, visits the first thing in the morning, and spends several hours a day looking after the case, which eventually recovers. He is thought to be a wonderful man—so careful. Why, he came to see me three times in the first day and always did the dressings himself! The objection so often raised by his opponents about freedom of choice of doctor was not, said Mr. Hastings, really so strong or so valid as they would make it out to be.

There was, of course, some hostile reaction to the kind of service thus outlined. It was maintained that a doctor at the present time is his own master, free to do as he likes without interference. (Mr. Hastings did not think so; if the night bell rang, morally one had to go.) Another critic recalled recent happenings in the L.C.C. medical service, and thought that something similar was bound to occur in the socialised service. A competent throat surgeon, with some experience of tonsil and adenoid operations, said he had recently received an instruction in writing how such operations were to be performed. Ethyl chloride was to be used; adenoids were to be examined with a posterior rhinoscope to see whether they were central or lateral and if there was a spur; and because there had been seven cases of post-operative scarlet fever out of 1450 operations at his particular clinic all children were to be given a prophylactic dose of anti-scarlet and antidiphtheria serum immediately before operation. The risk of anaphylaxis was said to be negligible, but it must be remembered that in all such cases the L.C.C disclaim legal responsibility, leaving the surgeon to bear all the risk. Another practitioner quoted his experience in the army. There was, he thought, no evidence of original research among the doctors in that service. They copied and used what the civilian had discovered. Mr. Hastings replied that the medical service was a side-line in the army's function—namely, that of becoming an efficient fighting machine; the army services were

doing excellent research in matters affecting that side of the army's duties—e.g., poison gas, detection of sounds of airplanes. Another criticism raised was that everything that is free is apt to be depreciated; the public values only what it has to pay for, if even a proportion of the cost. Surely it would be better to increase the efficiency of the practitioner by letting him do part-time work in all the departments that have now been removed from his purview, rather than to appoint some newly qualified whole-timer. It was remarked how rarely were reports received by a practitioner from an L.C.C. hospital to which he had sent a case with a proper medical letter. The position might be even worse in a State service. Whatever the drawbacks of the present schemes of contract service might be, they were felt by most of those present to be trivial in comparison with the conditions which would arise in a socialised service. The panel scheme has stood the test of more than one investigation. It does encourage men to work for their patients as well as for their own prosperity, and it does leave a considerable choice of action, both to practitioners and to patients—which is a safety-valve of some importance.

On Walking Out of the House

Dr. C. T. Norris (Manea, March) writes: "It is, I hope, not too late to put you a question arising out of the note under this heading in your issue of Nov. 11th (p. 1116), in which you obviously, and justly, imply that the machinery provided for dealing with complaints concerning panel doctors is inequitably weighted on the side of the patient. No matter how insolent a patient, or (as you rightly state is usually the case in such incidents) a patient's relatives are, the doctor is expected to submit to their insults; and if he takes the natural, and I may say only honourable, course of abandoning the case he is liable to punishment for neglect.

"Your statement that he 'has his remedies, if such they can be called' exactly states the situation. Over against the very probable punishment which awaits the doctor, can only be set 'to induce the patient to change to another doctor'—and it is outside anyone's power to induce a patient to do this if he or she does not wish it—'or to report the matter to the insurance committee,' which is practically powerless. Let me take the case of a doctor who, by reason of insult sustained by a patient's relatives, has abandoned a case, and has been punished for neglect. Has he no remedy at common law? It would presumably be possible for him to prove in court that his punishment for neglect was directly due to the action of the relatives: in other words, that by reason of their unjustifiable action he had sustained loss, and therefore had a good claim against them for damages.

"No one, I imagine, would wish to assert that the great majority of patients and their relatives fail to behave properly. It is however indisputable that 'certain lewd fellows of the baser sort,' whether patients or their relatives, assume that being on a doctor's panel gives them an unqualified right to insult him if his conduct does not in every respect conform to their own whims and fancies. It is these people against whom the panel doctor has under the Insurance Acts no real protection.

"I should be very glad if you could state whether any remedy is obtainable along the lines I have suggested, or by any other means, under the ordinary law of the land. If a remedy is obtainable, it would appear desirable for one of the defence societies to be asked to take up a few cases, and obtain judgment against the offenders. Once these people learn that although under the Insurance Acts a doctor is practically defenceless (which they already thoroughly appreciate) he can if he wishes make them pay for loss sustained by him in consequence of their wrongful behaviour, insults will cease as if by magic. Such people are invariably cowards: the coward only indulges his vices when he is, in fact or fancy, immune from retribution."

Appointments

EDWARDS, R. W., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer of Health to Dolgelley Urban Council.

HOSIE, W., M.B., Ch.B. Glasg., Certifying Surgeon under the Factory and Workshop Acts for Northwich, Chester.

NORMAN, V., M.D. Durh., F.R.C.S. Edin., D.P.H., Medical Officer of Health to Wareham and Purbeck Rural District Council.

WILLIAMSON, A. B., M.D. Edin., D.P.H., Medical Officer of Health for the city of Portsmouth, and Port Medical Officer

London County Council Hospital Staff.—The following promotion and appointment are announced:—
WATKIN, P. J., M.R.C.S., Medical Superintendent, Lambeth.
MANSELL, H. E., B.M. Oxf., M.R.C.P., Dep. Med. Supt. (Grade I.), Lambeth.

Vacancies

For further information refer to the advertisement columns

Ayr County Hospital.—Res. H.S.

Belgrave Hospital for Children, Clapham Road, S.W.—H.P. At rate of £100.

Brighton, Royal Sussex County Hospital.—H.S. £150.

Bristol Eye Hospital.—Asst. Res. H.S. At rate of £100.

Bristol Royal Infirmary.—Cas. H.S. At rate of £100. Also H.P.'s, and H.S.'s. Each at rate of £80.

Devon County Council.—Deputy County M.O. £720.

Douglas, Isle of Man, Noble's Hospital.—Res. H.S. £175.

East Sussex County Mental Hospital, Hellingly, Sussex.—Sen. Asst. M.O. £650.

Harrogate, Royal Bath Hospital.—Res. M.O. At rate of £156.

Hertford County Hospital.—H.S. At rate of £200.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. At rate of £50.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100.

Huddersfield Royal Infirmary.—Res. Surg. O. £225–£250. Also two H.S.'s. Each at rate of £150.

Hull Royal Infirmary.—H.S. to Sutton Branch Hospital. At rate of £160.

Ilford, King George Hospital.—H.S. At rate of £100.

Lincoln, Bracebridge Mental Hospital.—Fourth Asst. M.O. £350.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

London County Council.—Jun. M.O.'s. Each £7 a week.

Manchester, Christie Hospital and Holt Radium Institute, Withington.—Res. M.O. for Radium Therapy Dept. At rate of £150. Also Res. Radiological Asst. for X ray Dept. At rate of £275.

Manchester Ear Hospital, Grosvenor-square, All Saints.—Res. H.S. £120.

Middlesbrough, North Riding Infirmary.—Sen. and Third H.S. At rate of £200 and £125.

Middlesex Hospital, W.—Physician to Children's Dept.

National Temperance Hospital, Hampstead-road, N.W.—Hon. Asst. Physician. Also Hon. Asst. Aural Surgeon.

Norwich, Jenny Lind Hospital for Children.—Res. M.O. £120.

Oldham, Boundary Park Municipal Hospital.—Res. Asst. M.O. At rate of £200.

Oxford University.—Philip Walker Studentship in Pathology. £200.

Preston and County of Lancaster Royal Infirmary.—H.P. and H.S. Also Spec. H.S. Each at rate of £150.

Prince of Wales's General Hospital, N.—Hon. Clin. Assts. for Spec. Depts.

St. Stephen's Hospital, Fulham-road, S.W.—Asst. M.O. £350.

Southampton, Royal South Hants and Southampton Hospital.—Sen. H.S. £200.

Southport County Borough.—Deputy M.O.H. and School M.O. £600.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—Orthopædic H.S. £150.

Wakefield Mental Hospital.—Med. Supt. £1200.

Wandsworth Borough Council, S.W.—Asst. M.O.H. and M.O. for Maternity Home. £500.

West London Hospital, Hammersmith, W.—Res. Anæsthetist. At rate of £100.

Westminster Hospital, Broad Sanctuary, S.W.—Asst. Phys. for Diseases of Skin.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.

Woolwich and District War Memorial Hospital, Shooter's-hill, S.E. H.P. and H.S. Each at rate of £100.

Wrexham and East Denbighshire War Memorial Hospital.—Res. H.S. At rate of £150.

York, The Retreat.—Sen. Asst. M.O. £400.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Tayport, Fife.

NOTES, COMMENTS, AND ABSTRACTS

INDUCED AND SPONTANEOUS CANCER

A MISS WEILD FUND LECTURE

In 1923 Miss Mary Weild left a bequest of £500 for the purpose of research into the cause and cure of cancer. A committee was appointed by the Royal Faculty of Physicians and Surgeons of Glasgow to consider the most useful method of applying the interest from the capital sum. This committee, after consideration, recommended the appointment of a lecturer periodically, and the purchase of journals and other literature relating to cancer. Dr. J. A. Murray, F.R.S., was invited to give a lecture under this bequest on Dec. 8th at the Faculty Hall, Dr. R. Barclay Ness presiding. Dr. Murray chose as his subject the Bearing of the Experimental Induction of Cancer on our Conceptions of its Nature and Causation. The following is a summary of the lecture :—

An attempt is made in this lecture to survey the acquisitions of cancer research since the beginning of the experimental period, to present the essential features of malignant new growths and bring out the complexity of the problems of the nature of cancer. The cardinal importance of the successful transplantation of the malignant growths of the mouse is first emphasised as demonstrating the cellular basis on which the discussion must be founded. The processes take place inside limited groups of cells and once begun are restricted to their progeny; neighbouring cells do not join in. The remarkable constancy of the new properties of the cells which have undergone the malignant change is most clearly seen in the transplanted tumours. These vary very little in structure and behaviour in many years of propagation. They differ from cancer as it occurs in man and animals in being introduced ready-made into the host-animal which for the time being bears them, whereas natural cancers arise from the cells of the subject of the disease and are therefore native to the organism. This distinction introduces a difference in behaviour which has been eliminated by the discovery of methods of inducing primary cancer experimentally.

Although it has been possible by selective inbreeding from cancerous mice to obtain strains in which cancer is very common, this hereditary character is of the nature of a predisposition to develop the disease. The most fruitful line of investigation has proved to be that initiated by the work of Yamagiwa and his colleagues and successors, showing that repeated application of coal-tar to the skin sets up the cancerous process in the tarred area. The advantages of this method lie in the possibility of inducing cancer in any selected part of the covering of the body and having the part under observation throughout the experiment. The time taken is also known and comparative experiments can be carried out.

The tumours produced by the action of tar are true malignant new growths and indistinguishable from those occurring in man and animals in the same situations. Like them they begin in a limited area and increase in size by cell multiplication till, spreading in all directions, they invade and destroy structures essential to life.

The length of time taken to set up this process, even under the most favourable circumstances, is a considerable fraction of the span of life, and in relatively refractory individuals may extend to more than half a lifetime. This character of the experiments affords a satisfactory explanation of the increase in the incidence of cancer with age. Age of itself does not predispose to cancer. The inference has been drawn that in cancer of unknown origin, substances from without or within the body, acting slowly in the same way as tar in the experiments, sets up the same process ending in cancer.

The component or components of tar responsible for this cancer-producing power have not been identified with certainty, but it is known that they belong to the fraction which has a high boiling point. Pure substances belonging to the anthracene series have been prepared which act in the same way as tar when applied to the tissues repeatedly over long periods. Their chemical structure is closely related to that of certain natural secretions of the body, such as the œstrus-producing hormone. As these anthracene compounds can also elicit œstrus in immature animals the suggestion has been put forward that otherwise non-specific chronic irritation may induce cancer by the production of similar chemical substances in the cells.

The exact nature of the change set up by these and other cancer-producing agents is still obscure. The relative impermeability of the cell membrane which at first was thought to be peculiar to cancer cells is not restricted to them. When it occurs it makes a very precise distinction from the accompanying normal cells. In the same way the metabolic difference of partial utilisation of carbohydrate, at first thought to be restricted to cancer, occurs in many proliferating tissues which are not cancerous and even in some normal tissues. In fact no single structural or functional difference has been discovered which is peculiar to cancer. The general suggestion is made that a combination of several differences, each in itself insufficient to account for the distinctive behaviour of malignant growths, may reinforce each other when present in unusual proportions giving apparently new and disproportionate properties.

YEAR-BOOK OF LEARNED SOCIETIES

The fiftieth annual issue of The Official Year-book of the Scientific and Learned Societies of Great Britain and Ireland (London: Charles Griffin and Co., Ltd. Pp. 171. Price 10*s*.) contains a foreword by Sir Richard Gregory in which he describes the book as giving a bird's-eye view of scientific activities. Among the new claims staked out in the field of science during the last 50 years he can recall biochemistry, brewing, mining and metallurgy, mycology, water engineering, X rays, tropical medicine and hygiene, automobile engineering, ceramics, textiles, metals, fuel, petroleum technology—all these subjects have given rise to new societies, and each of them is included in the Year-book. The publishers remark that its issue has hardly been justified by financial return but are glad to think they may have forwarded the interests of science. Certainly the Year-book is among the works of reference which are indispensable to the editor of a scientific journal.

UNSUITABLE ACCOMMODATION FOR NURSES

A new nurses' home is to be erected in the grounds of the Prince of Wales's General Hospital, Tottenham. The bedrooms in one of the buildings at present occupied by the nurses are described in the *Tottenham Weekly Herald* as follows :—

"Plaster is peeling off the walls. Dozens of the window panes are broken. The casements do not fit, and the windows themselves in many cases either will not open or are so small that when they are open the rooms are not ventilated. In many cases five beds are huddled together in one small room with a low, blackened ceiling, walls crumbling with the damp, the whole lighted by one small window . . . One finds tiny airless rooms jammed between a cupboard and a huge cistern that clanks and rumbles all day and night, rooms five feet wide and about eight feet long, containing a bed, chest of drawers, a few pictures hung on the dingy walls, and high up a small window that it is almost impossible to open."

The new building, of which the same journal gives an attractive sketch, will cost nearly £15,000. It will be so arranged that all the sitting-rooms face due south.

DIARIES

THE HOSPITAL DIARY is the bright idea of two well-known hospital secretaries, to assist those engaged in any kind of hospital work by combining a two-days-on-a-page diary with a good deal of useful information. Besides the usual postal and legal items, weights and measures, land metric equivalents, there are extracts from various Acts of Parliament which the hospital officer has to bear in mind—e.g., notifiable diseases, births, deaths, dangerous drugs, cremation—and the first 50 pages are occupied by a series of short articles on the burning questions of hospital policy of the day: the problem of the out-patient, contributory schemes, insurance, and road accidents. Included also is a list of firms which specialise in the supply of hospital commodities. The diary is said to contain "all the important dates in the hospital world"; it certainly is fairly exhaustive as to racing events, but curiously enough does not mark Nov. 5th, when eye hospitals at all events have to keep beds ready for juvenile casualties. The diary, which measures 9×6 in., may be obtained from G. R. C. Brook and Co., 27, Old Bond-street, London, W.1, price 5*s*. 6*d*., post free. Next year it would be wise to make the cover more attractive.

LIPPINCOTT'S POCKET FORMULARY

Dr. G. E. Rehberger, author of Lippincott's Quick Reference Book, has brought out a third and revised edition of his Pocket Formulary (London: J. P. Lippincott Co. 15*s*.) which is intended to serve as a handy repository of modern therapeutic knowledge and to provide the practitioner with information not available to the unaided memory. Section I. presents the treatment of various diseases and symptoms, with the names and composition of drugs conforming to the tenth decennial revision of the U.S. Pharmacopœia and the fifth edition of the National Formulary. Section II. gives all these drugs in alphabetical order with their dosage, solubility, and action; it includes also a very useful list of new and unofficial remedies. The Formulary is conveniently printed and arranged and should be serviceable to all who are willing to familiarise themselves with trans-Atlantic therapeutic measures.

A MEDICAL ART CALENDAR

WE have received from Messrs. J. Philip Kruseman, publishers at The Hague, a medical art calendar for 1934, which is of convenient shape and lettered very legibly. It is illustrated with reproductions from famous pictures of medical significance. Of these there are 27, an average of rather over two pages of picture being allocated to each month. Most of the reproductions are from very familiar canvases, but the old friends in their satisfactory new shape will be welcome. As might be expected they are all of the Flemish School, many of them by such famous masters as Rembrandt, Gerard Dou, Karel Dujardin, and Van Helmont; but conspicuous among the pictures, as it happens, are two portraits by unknown masters, the persons depicted being Willem van der Straten, court physician to the Princess of Orange in the seventeenth century, and Jan Bleuland, professor of anatomy at Utrecht at the beginning of the nineteenth century, the latter giving the impression of quite an important picture.

EXCESSIVE LOCAL SWEATING

EXCESSIVE sweating of the armpits is a misfortune of which women patients occasionally complain. Often it will be found on inquiry that they have not exploited to the full the modern improvements in absorbent dress shields. The shields, made of proofed silk, are only suitable for women who perspire slightly; others will find effective shields such as those marketed by the Kleinert Rubber Company, made of very thin sheet-rubber covered with a double absorbent layer of fine cotton under fine silk. These can now be procured in large sizes, as wide as 9 in. across and with a high point which can be adjusted according to the area of maximum sweating. Women who remain uncomfortably conscious of malodorous sweating even when suitable shields are used and are frequently washed and replaced, may be advised to apply some local deodoriser and desiccating agent, and this is sometimes essential when evening dress is worn. Many proprietary preparations exist and may be applied indefinitely provided they contain no irritants. Of these irritants the chief is formalin, which ought never to be used as an ingredient of remedies designed for frequent application to the skin, valuable though it undoubtedly is as a deodorant. Preparations, such as Nonspi, which contain salts harmless in the strength of solution used, can be safely recommended for local application.

HOME SERVICE AMBULANCES

THIS voluntary service has now been established for some 14 years, and the increase in the annual number of road accidents within that time is reflected in the September quarterly report which has been issued. In the first 12 years of its existence the service carried one million cases; in the two years since then it has carried over a quarter of a million. The average number of cases carried annually has risen in the last five years by 25 per cent. Besides the drivers and their assistants the service also includes first-aid members who are often able with effect both to tend the patient and to restrain the untaught zeal of his friends. The service is organised by a committee working under the joint council of the Order of St. John of Jerusalem and the British Red Cross Society. The director and secretary is Major E. W. Paget, 12, Grosvenor-crescent, London, S.W.1.

MARCH FOOT

Mr. Harold Dodd[1] believes that *pied forcé* or march foot is a complication of subacute flat-foot, occurring in feet that are structurally weak. He quotes the observations of Morton, who described four radiographic signs, any one of which indicates a possible source of anterior foot trouble. These are: (1) a gap between the first and second cuneiform bones, tending towards excessive mobility of the metatarsal bone; (2) a short first metatarsal bone; (3) posteriorly placed sesamoid bones; and (4) as a corollary of these, hypertrophy of the second metatarsal bone. Examining radiograms from cases of march foot Dodd found one or other of these signs in 12 out of 13. The sequence of events is, he thinks, as follows: strain on a weak foot leads to muscular fatigue; during activity the foot goes into a valgus position with spasm of the interosseous muscles; and this throws more weight on the second metatarsal bone, which often hypertrophies. The congestion due to the spasm of the interossei causes hyperæmia, and hence enlargement of the foramina of the interosseous vessels. In this way a weak point is produced, and the final result is a spontaneous fracture.

[1] British Journal of Surgery, July, 1933.

Births, Marriages, and Deaths

BIRTHS

ELKINGTON.—On Dec. 9th, at Malvern, the wife of Dr. Guy Elkington, of a son.

GILMORE.—On Dec. 13th, at a London nursing-home, the wife of James Henry Lascelles Gilmore, M.A., M.R.C.S., L.R.C.P., of a son.

MARRIAGES

CONYERS—BERKELEY.—On Dec. 16th, at St. Margaret's, Addington, Kent, James Harold Conyers, F.R.C.S., to Margaret Elizabeth Anna, youngest daughter of Dr. and Mrs. Berkeley, of "The Mount," Addington, Kent.

DEATHS

CAMERON.—On Dec. 15th, at Toronto, Irving Heward Cameron, M.B., LL.D., F.R.C.S., Professor Emeritus of Surgery in the University of Toronto.

EDDOWES.—On Dec. 6th, at a nursing-home, Bath, William Eddowes, M.R.C.S., late of Shrewsbury, in his 95th year.

REYNOLDS.—On Dec. 14th, 1933, at 11, Brixton-hill, S.W.2, John Reynolds, M.D., in his 87th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.